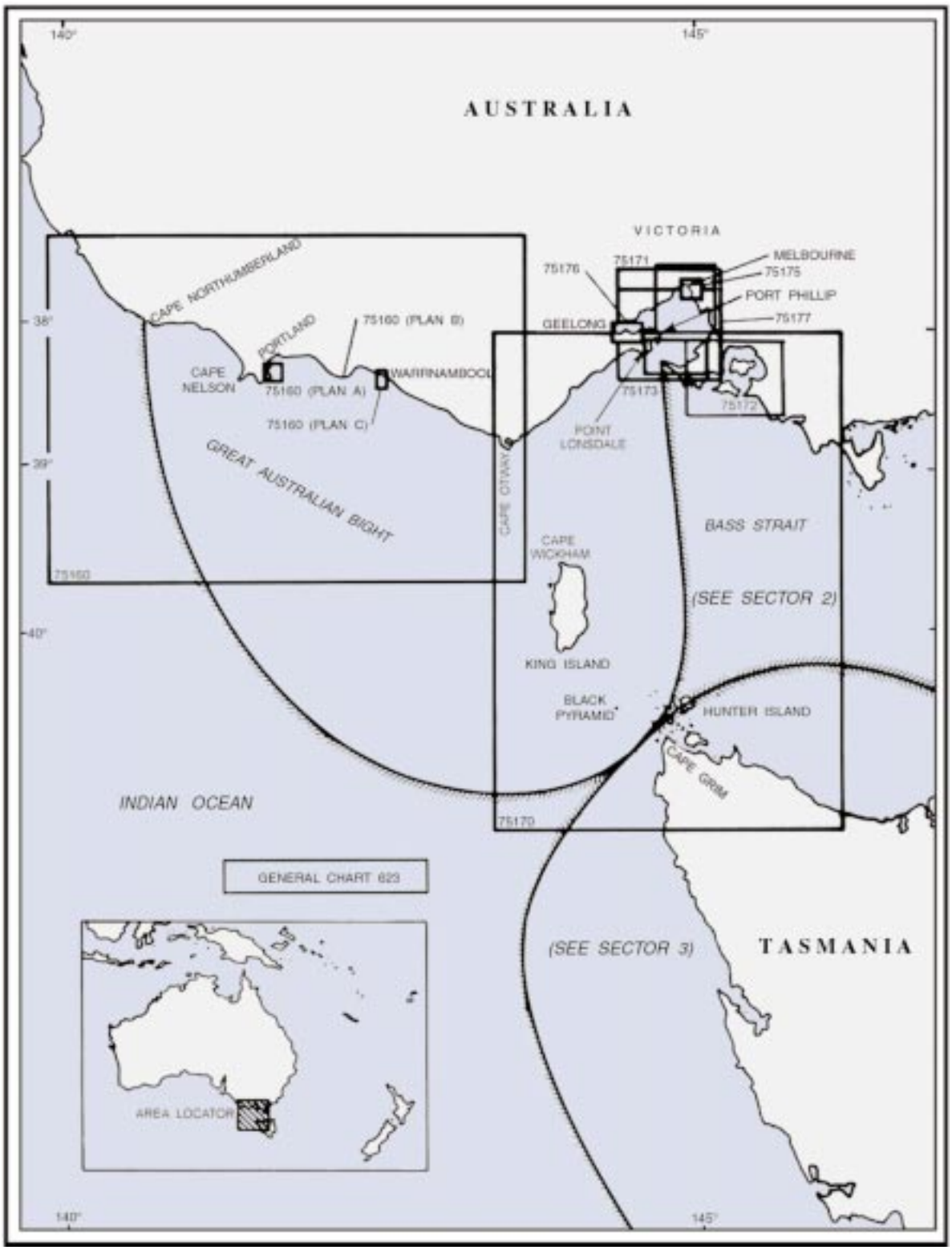

Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **1** — CHART INFORMATION

SECTOR 1

AUSTRALIA—CAPE NORTHUMBERLAND TO PORT PHILLIP, INCLUDING THE WESTERN ENTRANCE OF BASS STRAIT

Plan.—This sector first describes the S coast of Australia from Cape Northumberland to Cape Otway, followed by a description of the western entrance of Bass Strait, including King Island. The S coast of Australia from Cape Otway to Port Phillip, which includes the ports of Melbourne and Geelong, is then described. The arrangement of the sector is from W to E.

Cape Northumberland to Portland Bay

1.1 Cape Northumberland (38˚04'S., 140˚40'E.), about 30m high, is rugged and cliffy, with a hill rising to an elevation of 41m behind it. It may be easily identified by Mount Gambier and Mount Schanck, each of which are extinct volcanoes, and are conspicuous about 14 and 8 miles NNE, respectively, of the cape. Mount Gambier is a peak, 189m high, with a tableland extending E of it. Mount Schanck is a truncated cone, 122m high.

A light is shown from a white tower with a red band on a knoll, about 0.4 mile NE of the S extremity of the cape. The light is connected to the telephone system.

The cape has been reported to be a good radar target at 20 miles.

West of Cape Northumberland, for 1 to 4 miles offshore, there are fields of kelp, the tops of the kelp trailing a long distance on the surface of the water. The kelp does not appear to grow in depths greater than 30m.

The coast between Cape Northumberland and Cape Otway, about 140 miles ESE, is generally of moderate elevation, wooded in places, and backed by higher wooded land.

Winds—Weather.—On the S coast of Australia, a large range of temperature is experienced. In a normal year, extreme temperatures of more than 38˚C are experienced at Melbourne in January and February, while occasional values of around 0˚C may be experienced in July.

Rainfall on this coast is adequate and fairly reliable. To the W of Melbourne, winter is the wet season and summer is relatively dry. Most places on the coast find August to be the wettest month and January the driest. In Melbourne, October is the wettest month, with an average rainfall of 76mm, and January is the driest month, with an average rainfall of 44mcm.

Fog is infrequent at sea and is only moderately frequent as well as short lived at some of the larger Australian ports.

Gales of force 8 and over are moderately frequent at sea off the S coast. Much of the bad weather experienced occurs at fronts associated with E moving lows.

There is a high frequency of gales in the Bass Strait due to the channalization of E and W winds.

At Warrnambool, the afternoon winds are predominantly SW in most months of the year, but are variable in July. The early morning winds are SW in summer, but are between the NE and NW in winter. The average wind speed varies from 7 to 11 knots.

At Melbourne, at 0900, N winds predominate in the winter months. In summer, the winds are rather variable, but S and SW winds are the most frequent. At 1500, N winds predominate in winter and S winds in summer. The afternoon winds average about 10 to 12 knots in summer and drop to 8 to 9 knots from April to August. The morning winds are a few knots lighter on the average.

Caution.—Crayfish and shark fishing vessels operate up to 90 miles from the coast between Cape Northumberland and Cape Otway. Vessels should keep a good lookout for them.

Between the months of November to June, inclusive, extensive lobster fishing takes place on the continental shelf W of **Cape Nelson** (38˚26'S., 141˚33'E.) and in-shore of the 150m curve.

Mariners are requested, when passage permits, to transit outside the 200m curve in this area.

1.2 The coast between Cape Northumberland and Flint Point, about 5 miles E, is a low, sandy beach, with a bank behind it, and it is fronted by extensive drying ledges. A low, wooded range of hills extends 1.5 miles NE from Cape Northumberland; elsewhere the country is swampy for more than 1 mile inland. Flint Point is low and covered with heaps of stones.

Breaksea Reef, with depths of less than 4.9m, extends about 1.5 miles offshore, about 1.5 miles E of Cape Northumberland. The reef is steep-to on its W side, and the sea generally breaks over it with great violence.

Port Macdonnel, used by fishing vessels and pleasure craft with a draft of less than 1.5m, lies about 2 miles E of Cape Northumberland, and is situated on the shores of Macdonnel Bay, a slight indentation in the coast.

Danger Point (38˚03'S., 140˚48'E.), about 1.7 miles E of Flint Point, is low, with swamps inland of the point; a reef, with depths of less than 5.5m, extends about 1.5 miles S of the point.

A range of hills, attaining an elevation of 38m at its W extremity, begins about 3 miles NW of Danger Point and extends about 10 miles E to the Glenelg River. Mount Ruskin, 37m high, is located in this range, about 1.5 miles WNW of the mouth of the Glenelg River.

Green Point, about 3 miles E of Danger Point, is 15m high and so named from its verdant appearance. Ruby Rock, with a depth of 0.9m, lies about 2.5 miles SE of Green Point; during SE and E winds, the sea seldom breaks on this rock.

The coast between Green Point and the mouth of the Glenelg River, about 5.5 miles E, is a sandy beach backed by low sand hills. At the mouth of the river there is a sandy bar which is fordable at LW when the sea is smooth. Inside the bar the river is broad and deep.

The coast between the **Glenelg River** (38˚04'S., 140˚59'E.) and Cape Bridgewater, about 28 miles SE, is a succession of

sand hummocks, about 46m high, partially covered with bushes, with the sand in many places showing and reaching to their summits.

For about 14 miles from the Glenelg River, there are thickly-wooded tracts of rising ground, about 91m high, between 2 and 3 miles inland.

About 12 miles NW of Cape Bridgewater, a range of hills up to 158m high and heavily wooded lies about 2 miles inland of the coast hummocks. A group of high bare sand hummocks lies at the NW end of the range, between it and the coast. A large tract of sand lies from 7 to 4 miles from the cape.

Discovery Bay, between Cape Northumberland and the W side of Cape Bridgewater promontory, is rendered dangerous by an inward setting tide, and a heavy swell rolls in over the E part of the bay.

1.3 **Mount Kincaid** (38˚11'S., 141˚22'E.), 211m high, lies about 12 miles N of Cape Bridgewater, and about 4 miles from the coast. It is scarcely visible from seaward, its position being indicated by a few trees slightly elevated above the surrounding country.

Mount Richmond, 229m high, the most conspicuous landmark on this stretch of coast, lies about 7 miles N of Cape Bridgewater. It has a broad, flat top, and is thickly wooded, except on its SW side. A metal beacon, on a concrete pillar, 4.6m high, stands on its summit.

Cape Bridgewater (38˚24'S., 141˚24'E.) rises to a flat summit, 134m high, on the SE end of the promontory. The fall to Bridgewater Bay on its E side and to the S is sheer, but to the W and N, the downward slope is gradual to the 61m contour over pasture land. A stone cairn stands on the summit of the cape. The cape is visible at 25 miles in clear weather, and has been reported to give good radar returns at 18 miles.

Anchorage.—During E gales, which usually last about 3 days, small vessels may obtain temporary anchorage in Descartes Bay, in 11m, sand, about 0.7 mile W of Mount Dryden. The latter, 70m high and grass-covered, is located close to the coast, about 3.5 miles N of Cape Bridgewater. A watch should always be kept for a change to the prevailing W winds.

Bridgewater Bay is entered between Cape Bridgewater and Cape Nelson, about 6.5 miles ESE. A heavy swell rolls in during S and SW breezes, and, except under favorable circumstances, vessels ride uneasily. The swell threatens to break in a depth of 37m on a line between Cape Bridgewater and Cape Nelson, and actually does break nearly 1 mile offshore.

Mount Chaucer, about 3 miles NNW of Cape Nelson, is a small peaked hill, 123m high, on which stands a beacon. A conspicuous mass of drift sand lies close W of Mount Chaucer.

1.4 **Cape Nelson** (38˚26'S., 141˚33'E.) is an irregular cape of jagged cliffs, 61m high, rising at the back and center to lightly timbered and grassy hummocks, the highest of which, Picnic Hill, is 118m high. The cape is bold on its SE side. A house and water tank are conspicuous on the cape. Cape Nelson has been reported to give good radar returns at 19 miles.

A light is shown from a white stone tower, 24m high, on Cape Nelson. The light is connected by telephone with Portland.

Nelson Bay, entered between Cape Nelson and Cape Sir William Grant, about 4 miles ENE, has a coast faced with limestone and basaltic cliffs, 30 to 61m high.

Cape Sir William Grant, rising to an elevation of 62m, is conspicuous, crowned with trees, and is shaped like a helmet. A 10m shoal lies close off the cape.

Bald Hill, 65m high, stands about 1.5 miles NW of the cape. The E side of the cape is scarred by quarry excavations.

Point Danger (38˚24'S., 141˚39'E.), about 1.5 miles ENE of Cape Sir William Grant, is 16m high and abrupt.

Big Reef, with a depth of 3.9m, and on which the sea breaks heavily, lies about 0.8 mile S of the point.

Little Reef, with a least depth of 3.9m over its outer end, extends about 0.5 mile SE of Point Danger.

Lawrence Rocks, about 1.5 miles SE of Point Danger, consist of two conspicuous islets. The outer islet has two summits, the S and slightly higher islet is 35m high, with a flat summit. The inner islet, separated from the outer islet by a boat passage, is 22m high. Lawrence Rocks are steep-to, except NW of the inner islet. A 14m rocky patch lies about 0.3 mile S of Lawrence Rocks.

The passage between Point Danger and Lawrence Rocks is not safe. With strong winds from seaward, a current sets out through this passage, sometimes attaining a velocity of 3 knots, and during heavy S gales breaks across.

Portland Bay is entered between Point Danger and the entrance of the Fitzroy River, about 12.5 miles NE. Portland, on the W side of the bay, is the only large port on this stretch of coast, and is the natural outlet for the large agricultural and pastoral country of western Victoria.

Aspect.—In clear weather, when off Portland Bay, the lower volcanic peaks of Mount Eccles, 179m high, and Mount Napier, 443m high, located about 29 and 42 miles NE, respectively, of Cape Nelson, together with Mount Clay, 187m high, located about 7 miles WNW of the entrance to the Fitzroy River, will assist a vessel in identifying the coast. Mount Clay, with a fire watch tower, 16m high on its summit, is a flat-topped hill, with a notch in its center; except for the notch, it would resemble Mount Richmond, about 14 miles WSW.

Anchorage.—Portland Bay affords good anchorage, in a depth of 15m, 0.7 mile ENE of the harbor entrance. The anchorage is sheltered from all winds except from the SE.

Portland (38˚21'S., 141˚37'E.)

World Port Index No. 54140

1.5 The port of Portland lies in Portland Cove, W of Observatory Point, which is located about 3 miles NNW of Point Danger. The harbor is formed by two rubble breakwaters; Main Breakwater extends N and NNE from Observatory Point, and Lee Breakwater extends ESE from the W side of the harbor. Major exports include grain and woodchips.

Whaler Point, the N entrance point of Portland Cove, lies about 1 mile NW of Observatory Point, and is a limestone cliff, 32m high. Anderson's Point lies about 0.3 mile farther N.

The Port of Portland

http://www.portofportland.com.au

Tides—Currents.—The tidal rise at Portland is 0.8m at MHHW, and 0.2m at MLLW. The tide in Portland Bay, as regards its rise and fall, is greatly dependent on the winds.

Depths—Limitations.—Whaler Reef, a detached shoal lying 0.2 to 0.3 mile E of Whaler Point, has a least depth of 3m.

There are depths of 14.2m in the harbor entrance, and over 13m in the approach. There are six shipping berths in the port.

The K.S. Anderson Wharf, which is 396m long, and includes Berth No. 1 and Berth No. 2, lies on the W side of the root of Main Breakwater. These berths have alongside depths of 12.2 and 11.2m, respectively. Two 27.4m high traversing loaders, for handling bulk grain, are available at K.S. Anderson Wharf.

Berth No. 5 and Berth No. 6 lie across the basin from Berth No. 1 and have alongside depths of 12.2 and 12.0m respectively. A trawler wharf and slipways lay adjacent to the marina and yacht club.

The Smelter Berth, on the W side of the Main Breakwater, is 205m long, with a depth of 12.2m alongside. It is used for alumina.

The S.L. Patterson Tanker Berth, on the S side of Lee Breakwater, is 76m long, with a depth of 10.5m alongside.

Aspect.—Observatory Hill, about 26m high, lies close SW of Observatory Point, and a chimney, with an elevation of 76m, lies about 0.2 mile SSW of the point.

A light is shown from a white stone tower, 12m high, on Whaler Point.

There are several silos near the S end of No. 1 Dock. The Catholic Church spire is conspicuous about 0.2 mile SSW of the root of Lee Breakwater.

A chimney is conspicuous about 0.2 mile W of Whaler Point; a water tower, 58m high, lies about 0.1 mile W of Andersons Point.

Portland

Pilotage.—Pilotage is compulsory, except for vessels exempted by law, and is available 24 hours for any vessels over 35m in length and/or over 350 grt. Vessels should send their ETA and request for pilots at least 24 hours in advance to the Harbor Master. Pilots board vessels in position 38˚20.09'S, 141˚39.84'E. The pilot launch is equipped with VHF radiotelephone.

Regulations.—The port limits are defined by a line extending N from Danger Point to the opposite shore of the bay. Departure drafts of 12.7m are allowed for Berth No. 1 and Berth No. 5 with written approval from the Harbor Master.

Anchorage.—Anchorage can be obtained, in 14.6 to 16.5m, about 0.5 to 0.7 mile ENE of the entrance to the harbor.

The quarantine anchorage, in a depth of 12.8m, lies E of Main Breakwater. The quarantine line runs N-S through the head of this breakwater.

The explosives anchorage is E of a line drawn 020˚ from Observatory Point and exceeding a distance of 0.8 mile from the shore.

Directions.—Approaching Portland Bay from the W, a vessel should endeavor to sight the high land of Cape Bridgewater, which, when seen from a distance of 12 or 15 miles SW, appears covered with white sand patches. After identifying Cape Nelson, steer a prudent distance off it and Lawrence Rocks. When Mount Clay is open E of Lawrence Rocks, alter course N and proceed to the anchorage or the harbor as convenient.

From the E, a vessel should pass about 0.5 mile S of **Lady Julia Percy Island** (38˚25'S., 142˚00'E.), then shape a course for the anchorage and harbor.

At night, from the W, vessels should not round Lawrence Rocks until Whaler Point Light is visible; then course may be altered N until in the white sector of Whaler Point Light.

1.6 Minerva Reef, with depths of less than 5.5m, extends about 0.7 mile from the greater part of the NW shore of Portland Bay, from about 1 mile N of Anderson Point to the entrance of the Surrey River. The whole area forms an uneven bottom, over which the sea breaks heavily at times.

The entrance of the **Surrey River** (38˚16'S., 141˚42'E.) is fronted by a bar and is spanned by a road bridge about 0.3 mile above its entrance.

The entrance of the Fitzroy River, about 7 miles E, shows up well as a break in the regular coastline. Julia Hill, 20m high, and surmounted by a white beacon, lies about 2 miles W of the entrance of the river. A prominent stranded wreck lies on the beach S of Julia Hill.

Julia Reef, with a least depth of 7.3m, is a large irregular area of ground on which the sea breaks in S gales, about 1.5 miles S of Julia Hill.

The entrance of Lake Yambuk lies about 10.5 miles ESE of the entrance of the Fitzroy River; the Shaw River enters its N end. Mount Hummock, 65m high, with a red conical beacon on its summit, lies about 3 miles SE of Lake Yambuk.

Mills Reef, about 1.5 miles W of Mount Hummock, consists of several rocks which dry about 0.9m and are covered with masses of kelp.

Boulder Point (38˚24'S., 142˚09'E.), about 6 miles ESE of Lake Yambuk, is backed by The Sands, conspicuous white sand dunes, 91m high, and one of best landmarks for making the low land of Port Fairy.

The coast from Boulder Point to the S end of Griffith Island, about 4.7 miles E, is low and covered with grass, with a few scattered trees. A water tower, with a dome top, is conspicuous about 3.2 miles E of The Sands.

A rock, with a depth of less than 1.8m, lies about 0.2 mile S of Boulder Point. A narrow strip of basaltic boulders, 3.7m

high, about 1.5 miles E of The Sands, lies about 0.2 mile offshore; this projection is always indicated by breakers.

Lady Julia Percy Island (38˚25'S., 142˚00'E.), about 21 miles E of Cape Nelson and 4.5 miles offshore, is 53m high, flat-topped, and cliffy on all sides. The island has been reported to give good radar returns at 20 miles. It presents the same appearance from all directions, with the exception that its S end is somewhat higher than its other parts. A white cairn, 3m high, stands on the W point of the island.

Landing may be made, except in N winds, in a small cove on the N side of the island at some steps cut in the rock face.

The passage, about 3 miles wide between Lady Julia Percy Island and Mills Reef, is used by vessels with local knowledge in N winds. Vessels are cautioned that a heavy swell sets in from the SW, with winds from the SE to SW.

Port Fairy (38˚23'S., 142˚15'E.)

World Port Index No. 54130

1.7 Port Fairy lies at the SW end of Port Fairy Bay, which is entered between Griffith Island and Reef Point, about 2.3 miles NE. Back Passage, on the W side of Griffith Island, is shallow, rocky, and closed by a rubble wall extending across it.

The Moyne River enters Moyne Lagoon at its N end and then flows through a narrow channel, with the town of Port Fairy on its W bank, to the sea. The entrance of the river lies between two stone training walls. Port Fairy is now principally a fishing port.

Depths—Limitations.—A drying reef extends about 0.1 mile E, and rocky ground, with depths of less than 5.5m, extends about 0.2 mile E and 0.3 mile N of the NE end of Griffith Island.

In 1976, a least depth of 2m could be carried from the entrance of the Moyne River to the N end of the wharves at Port Fairy, but due to freshets, this depth cannot be relied on.

Off Reef Point, volcanic boulders from 0.6 to 2.7m high, extend about 0.2 mile, and sunken rocks extend about 90m farther S.

Mariners are advised that depths at and along the river entrance are constantly changing. Dredging is carried out periodically. Less than charted depths may exist and local knowledge is required to enter the port.

Aspect.—Griffith Island is low, with its NE point about 4.6m high. A double-peaked hummock, 19m high, with a conspicuous red beacon on its N peak, lies near the S end of the island.

Griffith Island Light is shown from a tower, 11m high, at the NE extremity of Griffith Island.

Battery Hill, 15.8m high, lies about 0.3 mile W of the head of the SE training wall.

Tower Hill (38˚19'S., 142˚23'E.), about 7.5 miles NE of Griffith Island Light, is 98m high, and the most remarkable landmark seen when approaching Port Fairy from the S. A conspicuous tower stands close NE of Tower Hill. Tower Hill Lake lies about 1 mile W of Tower Hill. Viewed from the W, Tower Hill is not clearly visible, except in clear weather, due to a higher tableland E of it. From the S, it appears W of this tableland as a conical peak. From the tableland, the land E and W is higher than the general coast line, and it slopes to about the same elevation at either side, with the land W appearing to be joined to Tower Hill.

Regulations.—The S limit of Port Fairy is a line drawn across the S entrance points of Back Passage, and the SE limit is a line joining Griffith Island Light and Tower Hill.

Anchorage.—Anchorage may be obtained, in about 9.1m, sand, about 0.8 mile NE of Battery Hill. Small vessels anchor, in about 5.5m, about 0.2 mile closer inshore. Vessels anchoring during the continuance of a SW gale may get as close in as their draft will permit.

The explosives anchorage is within a circle with a radius of 300m, centered 017˚, 1,300m from Griffith Island Light.

These anchorages are bad with E winds, and vessels are recommended not to try to ride out a SE gale.

Directions.—After identifying the water tower about 2 miles W of Griffith Island, the double-peaked hummock and lighthouse on the island, and Tower Hill, steer to pass a prudent distance from the reef and foul ground extending from the NE end of Griffith Island. Then steer for the anchorage. At night, a vessel should not anchor until Battery Hill Light is opened.

If bound for the wharves at Port Fairy, pass N of the buoy, moored about 0.4 mile N of Griffith Island Light, then proceed to the entrance of the Moyne River. From the entrance, steer a mid-channel course to the wharves.

Caution.—Submerged pilings of an old jetty extend about 0.2 mile offshore abreast Battery Hill.

Coastal Features

1.8 The coast from Reef Point to **Sisters Point** (38˚22'S., 142˚19'E.), about 1.5 miles ENE, is a succession of bare sand hummocks, about 15.2m high, fringed by rocks, some of which dry and some of which are sunken, extending about 0.5 mile offshore. Sisters Point is conspicuous, having immediately over it two hummocks, 20m high, and so named from their similar appearance.

A small sandy point, fringed with boulders, lies one mile E of Sisters Point. Armstrong Bay, E of this point, is nearly filled with sunken rocks. Helen Rock, about 1.5 miles ESE of the sandy point, is a pinnacle with a depth of 1.8m; it is steep-to and the sea rarely breaks over it.

The coast from Armstrong Bay to **Pickering Point** (38˚24'S., 142˚28'E.), about 6 miles ESE, is sandy and backed by grassy hummocks, 30 to 49m high. A tract of bare sand lies between 1 and 2 miles W of Pickering Point. The coast for about 0.7 mile WNW of Pickering Point consists of sandstone cliffs, having numerous indentations, and with rocks, which dry 0.6m, and sunken rocks lying off it, in some places up to 0.3 mile offshore.

Warrnambool Harbor (38˚24'S., 142˚29'E.)

World Port Index No. 54120

1.9 Lady Bay, in which is included the port of Warrnambool, is an indentation extending from a reef S of Warrnambool Breakwater to the Hopkins River, about 1.5 miles ENE.

Warrnambool Harbor, located on the banks of the Merri River that lies on the W side of Lady Bay, is partially sheltered by the breakwater, and lies inside several islets. Numerous

rocks extend SE from Pickering Point. The harbor is considered the best shelter, during SE gales, of any of the W ports of Victoria, due to the outer swell being broken by shoal rocky ground which extends from the mouth of the Hopkins River. It is not safe to enter or leave this harbor during SW or S gales, as the sea then breaks across the entrance with great violence; a vessel approaching the harbor under such conditions should make for Portland Bay. The harbor is only used by fishing vessels.

Depths.—Limitations.—South Channel, leading to Warrnambool Harbor, lies between Annabella Reef and the shoal rocky ground, with depths of less than 9.1m, which extends to about 1 mile S and 1.2 miles SW from the entrance of the Hopkins River. A large amount of kelp is found in this channel and the channel was reported to have a least depth of 8.5m on the range line. This channel is unsafe in S and SW gales. The rocky ground on the E side of South Channel breaks in bad weather and in a heavy swell; in calm weather, a vessel may cross it in any direction, but when approaching from the SE, a vessel will be beam-to the swell.

Aspect.—Middle Island (38˚24'S., 142˚28'E.), 21m high and surmounted by a white beacon, and Merri Island, 14m high, close NW, lie in the entrance to the Merri River in an area of foul ground extending about 0.4 mile S of Pickering Point.

The Merri River enters the sea through Merri River Cutting close E of Pickering Point. The mouth of the river is usually closed, but floods wash the sands from its mouth, allowing the flow of a large body of water.

Breakwater Rock, 5m high, lies about 0.1 mile E of Middle Island, and close S of the root of Warrnambool Breakwater. The breakwater, built of concrete blocks, extends about 0.3 mile ENE of Breakwater Rock, and is connected by a wooden viaduct to the shore at the E side of the mouth of the Merri River. The N side of the breakwater is a wooden wharf, fitted with spring buffer piles; the depth alongside is subject to variation, especially at its outer end. In 1961, there were depths of 2.4 to 5.5m alongside its outer part.

Inner Reef and Annabella Reef, both of which dry, lie about 0.1 and 0.2 mile SE, respectively, of Breakwater Rock. Rocks, awash, extend about 0.1 mile SE of Annabella Reef; the sea breaks heavily in this area.

The N shore of Lady Bay is a low sandy ridge, backed by higher and well-wooded land and the town of Warrnambool. A hotel lies about 0.3 mile NNW of the root of the breakwater and a chimney lies about 0.1 mile farther NNE.

The entrance of the Hopkins River is rock-bound and shallow, but within there are depths of 5.5m for several miles. Hopkins Reef, which dries 0.9m at its seaward end, extends about 0.3 mile S from the river entrance.

East of the river, the land is open rising gradually from the shore and terminating in a grassy hill, 67m high. A hill known locally as Hopkins Hill, 37m high, and on which there is a white beacon, lies about 0.2 mile E of the river entrance.

Mount Warrnambool (38˚19'S., 142˚44'E.), about 11 miles inland and 14 miles ENE of Middle Island, is visible, in clear weather, from a vessel 5 miles offshore between Port Fairy and Warrnambool. It has a rounded, but not even summit, 217m high; a low spur of the same hill lies about 3 miles W.

Lights, in line bearing 008.3˚, lead through South Channel. The front light is shown from a white stone tower in front of the town, and the rear light is shown from a white stone structure about 0.1 mile N of the front light.

A conspicuous round stone water tower, with a flat top, 65m high, lies about 1 mile N of the range lights.

Signals.—The port limits of Warrnambool Harbor is the area within a circle of 1 mile radius, centered on the rear range light.

A black ball by day, or a red light at night, shown at the masthead of a flagstaff near the rear range light, indicates that it is unsafe for vessels to enter the harbor. This station is unattended at night, and when a red light is shown at night, it will indicate the condition at sunset; changes during the night will not be indicated.

Anchorage.—Warrnambool Harbor is not suitable for large vessels. Anchorage can be taken where most convenient according to the draft and prevailing weather conditions; a good scope of chain should be used, as there is a heavy scend even in the finest weather. The anchorage area inside the breakwater for small vessels has been reduced due to silting, so that shelter from the breakwater is not as effective.

The quarantine anchorage lies E of the meridian drawn through the head of the breakwater.

The explosives anchorage lies within a circle with a radius of 300m, bearing 167˚, 1,550m from the rear leading light.

Directions.—Tower Hill, previously described in paragraph 1.7, is the best guide to the locality. Mount Warrnambool, more than 10 miles inland, is often obscured by mist, and within 4 miles of the coast it is obscured by the land in front of it.

Warrnambool Harbor should be entered through South Channel with the range lights in line, bearing 008.3˚. A depth of 10m can be carried through this channel by keeping the rear light structure a little more than its own width open W of the front light structure, but this leads very close to Annabella Reef. When the sun is near the meridian, the rear light structure is difficult to identify, but the front light structure in line with the W side of the water tower on the N side of the town may be taken as in line with the rear light structure.

Vessels entering the harbor through South Channel at night should alter course E off the range line when the light on the head of the breakwater is abeam.

Caution.—Vessels approaching from the SE at night should note that the rear range light is obscured when bearing less than 322˚.

Warrnambool Harbor to Cape Otway

1.10 The coast from about 4 miles ESE of Warrnambool to Moonlight Head, about 38 miles SE, is cliffy and presents an almost level appearance; the only break to its uniformity is the broad-topped hill, 67.4m high, over the E bank of the Hopkins River, and a fall in the land 9 miles E of Warrnambool. The cliffs become higher as Moonlight Head is approached.

The coast from the Hopkins River to Flaxman Hill, about 14 miles SE, is apparently bold, but a heavy swell constantly rolls in and breaks in depths of about 9.1m. **Flaxman Hill** (38˚33'S., 142˚55'E.) is 79m high, with a stone cairn, 1.8m high, on its summit. Another hill, about 0.3 mile NW of Flaxman Hill, is not as high, but is sometimes more conspicuous due to its sandy appearance. The two hills are a good guide to the locality of this part of the coast, which otherwise appears the same.

About midway between the Hopkins River and Flaxman Hill, the coastal range immediately over the cliffs is 74m high, and higher than the adjacent land on either side.

The coast from Flaxman Hill to the Bay of Islands, about 4 miles SE, is known as the Bold Projection due to its bold, indented and rugged nature. The Bay of Islands may be identified by its white cliffy appearance, varied by numerous islets, all of the same character, presenting a striking appearance.

A bay, in which there are many rocky islets, lies between the Bay of Islands and Curdie Inlet, about 4 miles ESE. The sea breaks heavily 0.5 mile offshore, and it is probable that sunken rocks fringe all of this stretch of coast.

Curdie Inlet is conspicuous due to the sandy nature of its entrance, which is often closed. There are many drying reefs in its mouth. A conspicuous patch of sand is at the W point of the inlet, on the highest part of the coast, and E there are other sandhills or patches; these are more conspicuous from their contrast with the cliffy coast on either side. Limestone rocks lie off the W and E entrance point of Curdie Inlet, those off the E entrance point are about 0.3 mile from it and are joined to it by a narrow neck of sand. A conspicuous silo stands on the W entrance point of the inlet. Schomburg Rock, 5.2m high, is the highest of the E rocks, and a ledge extends NW and SE. The sea breaks heavily E and S, and across the mouth of the inlet from the ledge to the rocks off the W entrance point.

The village of Peterborough, a popular beach resort, stands on the W entrance point of Curdie Inlet. A road bridge spans the entrance of the inlet.

The coast from Curdie Inlet to Hesse Point, about 3 miles ESE, then to the entrance to Port Campbell, about 2 miles farther E, is irregular and cliffy. At Curdie Inlet the appearance of the coast begins to change due to the cliffs being backed by high land.

1.11 Port Campbell (38˚37'S., 142˚59'E.) (World Port Index No. 54110) is only suitable for small craft with local knowledge, and is directly open SW. It is entered between two headlands, and is easily identified by Hesse Point, also by a remarkable rock, 72m high, lying about 1.5 miles E and about 0.2 mile offshore.

A reef, over which the sea breaks heavily, extends about 0.8 mile SW of the E headland, and a reef, over which the sea breaks occasionally, extends about 0.2 mile SW of the W headland. The entrance channel, between the reefs, has a least depth of 5.5m for a width of 61m.

The channel leading to the jetty at Port Campbell is marked by beacons; the T-head jetty has a depth of 2.7m alongside its head. The anchorage has depths of 1.8 to 11m, sand, with patches of limestone rock. In heavy weather, there is a great backwash off the beach, causing vessels to surge considerably at their anchors, necessitating a spring being run out to the shore. In the summer months (December to March), there is smooth water at the anchorage.

The current sets principally SE, or outward across the E breakers, but is much influenced by the wind.

The Sherbrook River, closed in the dry season, lies about 3 miles ESE of Port Campbell. Sow and Pigs, consisting of a few islets and rocks, lie between 1 and 2 miles ESE of the mouth of the Sherbrook River. A rock, 64m high, lies about 0.7 mile farther ESE.

1.12 Point Ronald (38˚43'S., 143˚09'E.) is a bluff, 78m high, made conspicuous by a large body of drift sand on its E side. Oliver Hill, 141m high, rises near the coast midway between Point Ronald and Moonlight Head.

Moonlight Head is bold, rounded, and thickly wooded. The hills immediately over this part of the coast rise to elevations of about 152m, the highest being 166m high. These hills form spurs of the Otway Ranges, which rise gradually behind the coast, until from 2 to 3 miles inland they attain an elevation of over 305m, Mount Chapple, 549m high, with a rounded summit, is the highest mountain of the Otway Range NNW of Cape Otway, and rises about 10 miles NE of Moonlight Head.

Several drying ledges, skirted by a few sunken rocks, about 0.2 mile offshore, lie from 1 to 3 miles WNW of Moonlight Head. Several above-water rocks lie off Moonlight Head.

Reginald Point (38˚46'S., 143˚16'E.), with an islet close off it, lies about 0.3 mile NE of Moonlight Head. A radio mast, 23m high, with an elevation of 311m, lies about 2 miles NE of Reginald Point. In 1983, a shoal, with a depth of 10m, was reported 5 miles SSE of Reginald Point.

Caution.—A bank, with a depth of 10m, lies about 4.2 miles SSE of Moonlight Head. A historic wreck, with an associated restricted area, lies 10 miles WSW of Moonlight Head and can best be seen on the chart.

Lion Headland, about 3.2 miles ENE of Moonlight Head, is formed of bold high cliffs, believed to be the highest on the coast of Victoria; the Otway Ranges have the greatest elevation when near the coast.

Rotten Point, about 4 miles farther ESE, is rocky, with a rock, awash at HW, about 0.2 mile S of it. The Joanna River, with a sand islet in its mouth, enters the sea about 1 mile NW of Rotten Point; there are several conspicuous patches of sand about the mouth of the river and the point.

The coast between Rotten Point and Cape Otway is rocky, and the sea generally breaks in depths of 9.1m. Midway along this coast, a conspicuous mass of drift sand lies close E of the mouth of the Ayr River. Behind this stretch of coast are sandhills, 107m high, covered with stunted brush.

A conspicuous conical peak, 503m high, with a range of about the same elevation close NE, lies about 10 miles NNE of Cape Otway.

1.13 Cape Otway (38˚52'S., 143˚31'E.), the N point of the W entrance to Bass Strait, is a bluff, cliffy projection, 76m high, of dark-brown color, with patches of coarse sandstone, rising to sparsely wooded grassy hummocks, not exceeding 107m high.

Otway Reef, with a depth of 3m, lies on a bank, with depths of less than 9.1m, extending about 1 mile S of Cape Otway. A heavy tide rip extends about 2 miles S of the cape.

Cape Otway Light is shown at an elevation of 91m, from a round tower, 19m high. A radiobeacon mast, 21m high, and buildings are near the light structure.

Cape Otway has been reported to be a good radar target at 21 miles.

Caution.—Cape Otway should not be approached within a distance of 3 miles, nor rounded at less than that distance. A

detached shoal, with a depth of 16.4m, was reported 1.7 miles SSW of Cape Otway.

Bass Strait

1.14 Bass Strait separates Australia from Tasmania. Its N side lies between Cape Otway and Wilson Promontory, about 134 miles E; its S side lies between Cape Grim (40˚41'S., 144˚41'E.), the NW extremity of Tasmania, and Eddystone Point (41˚00'S., 148˚21'E.), the NE extremity of Tasmania.

King Island lies in the middle of the W entrance to Bass Strait; in its E entrance are numerous islands and rocks, the principal being the Furneaux Group, which lies in the SE part of the E entrance. The Furneaux Group is separated from the NE part of Tasmania by Banks Strait, which will be described in paragraph 3.4. The bottom in Bass Strait consists mostly of sand and shells in the NW and greater part, and mud, marl, and ooze in its SE part.

The best route to enter Bass Strait from the W is between King Island and Cape Otway. The best route to enter Bass Strait from the E is by means of the Traffic Separation Scheme immediately S of Wilson's Promontory. The fairway between these routes is wide and deep.

Above and below-water rocks and islands exist in other routes through Bass Strait, making navigation through more difficult.

Caution.—An IMO-adopted traffic separation scheme has been established S of Wilson's Promontory and is best seen on the chart.

An Inshore Traffic Zone is situated between the traffic lane for westbound traffic and Wilson's Promontory.

An IMO-adopted Area to be Avoided has been established N of the Traffic Separation Scheme in the Bass Strait. This area is best shown on the chart.

Vessels approaching Bass Strait from the W should make landfall off Moonlight Head or Cape Otway. In approaching the strait, due allowance should be made for winds and currents, particularly during the prevalence of SW or S gales. In thick weather a vessel should keep in depths of over 73m.

The channel between King Island and Cape Otway is clear of dangers.

Shark and crayfish fishing fleets operate in Bass Strait. Shark fishing vessels operate with long lines, the ends of which are marked by flagged buoys.

Oil exploration rigs and oil production platforms may be encountered off the Australian coast. Vessels should not approach oil platforms in Bass Strait within 2.5 miles.

A undersea gas pipeline runs between Australia and Tasmania across Bass Strait.

Bass Strait—Western Entrance

1.15 The W entrance to Bass Strait, between Cape Otway and Cape Grim, about 120 miles SSE, is divided by King Island into two channels. The NW channel is safer. The SE channel is obstructed by numerous dangers and should not be used by vessels without local knowledge except in cases of emergency.

King Island

1.16 Cape Wickham (39˚35'S., 143˚57'E.), the N extremity of King Island, lies about 48 miles SSE of Cape Otway. The cape is formed of granite cliffs, 61m high, behind which the ground rises slowly to a hill, about 91m high, about 1 mile S.

Cape Wickham Light is shown from a round tower, 48m high, about 0.6 mile SW of the cape. Cape Wickham has been reported to give good radar returns at 20 miles.

Navarin Reef, awash at HW, lies about 2.2 miles NE of Cape Wickham Light. A rock, awash, and a shoal, with a least depth of 12.8m, lie about 0.1 mile E and 1.2 miles ENE, respectively, of its shallowest part. The sea always breaks on Navarin Reef.

Harbinger Rocks are two groups of rocks, about 1.2 miles apart. West Harbinger, about 4.2 miles WNW of Cape Wickham Light, dries about 1.2m, and has the appearance of a flat-topped boulder, over which the sea always breaks; a sunken rock, over which the sea does not break, lies about 0.1 mile SW. East Harbinger, about 3.8 miles NW of Cape Wickham Light, is a group of rocks over which the sea generally breaks. Both groups are steep-to, with deep water between them.

Tides—Currents.—Off Cape Wickham, very strong tidal currents are occasionally encountered; they are considerably affected by the wind. With W gales the rate of the E current, which is normally about 2 knots at springs, may be increased to 5 knots close inshore. Its strength decreases as its distance offshore increases. Easterly gales have the effect of increasing the W tidal current.

The tidal currents SW of King Island are irregular and are sometimes very strong. The wind also has considerable effect on the currents S and W of King Island, and with strong or prolonged W winds, the resultant of the current and the E tidal current may produce a SE onshore set with velocities up to about 2.5 knots.

Caution.—In approaching King Island from the W, especially during thick or hazy weather, vessels should exercise caution and sound frequently. Many fatal wrecks have occurred on this island, from errors in reckoning, and in consequence of not making the land near Cape Otway.

1.17 West coast of King Island.—The W coast of King Island, from Cape Wickham to Stokes Point, about 35 miles S, is backed by densely-wooded hills, 91 to 122m high.

Phoques Bay is formed between Cape Farewell, about 1.5 miles SW of Cape Wickham, and New Year Island, about 6 miles SW. Sunken rocks, on which the sea breaks, extend about 0.7 mile offshore, about 2 miles S of Cape Farewell.

New Year Island (39˚40'S., 143˚50'E.) is about 37m high near its S end, with a cairn on its summit. Rocks, some of which dry, extend about 0.4 mile from its SW and S sides, and a detached rock, 2m high, lies about 0.3 mile off its W side. Christmas Island, close S of New Year Island and separated from it by a narrow channel, is less than 30m high. A rock, 1.5m high, lies on a shoal, with depths of less than 5.5m, which extends about 1 mile from the E side of Christmas Island; a rock, 1.2m high, lies on the seaward end of foul ground extending about 0.3 mile from the W side of the island.

Whistler Point lies about 1.2 miles SSE of Christmas Island, from which it is separated by above-water rocks, reefs, and sunken rocks, covered with kelp, and separated by narrow

channels. The land rises to an elevation of 81m about 1 mile SE of Whistler Point.

Anchorage.—Franklin Road, E of New Year Island and Christmas Island, provides anchorage for vessels with local knowledge, in a depth of about 12.8m, but the anchorage is exposed to W winds.

The coast between Whistler Point and Netherby Point, about 12 miles S, presents a uniform appearance, broken at intervals of about 3 miles by small rivers. A conspicuous patch of sand lies about 1.5 miles S of Whistler Point, and a conspicuous long and bare sandhill, with a sandy beach at its foot, lies about 5.5 miles farther S. This coast is broken by bays with off-lying rocks, some drying and others above water; sunken rocks extend about 0.7 mile offshore, and outside them there is foul ground, which, with tidal currents and a W swell, often cause a breaking sea, leading anyone unacquainted with the coast to imagine rocks everywhere.

An 11m rocky patch, which breaks occasionally, lies on the seaward side of a bank, with depths of less than 20m, about 4 miles NNW of Netherby Point. A rock, awash, which breaks heavily, and a 5.5m rocky patch lie about 2 miles NW and 2 miles SW, respectively, of the same point.

An aviation light is shown occasionally, at a height of 79m, from a metal tower, 9m high, about 2.5 miles NE of Netherby Point.

Currie Harbor, about 1 mile S of Netherby Point, affords shelter to small craft with local knowledge. A light is shown on the S side of the harbor. Tidal signals are shown near the light structure. The entrance channels into the harbor are marked by range beacons. There is a jetty, 168m long, with depths of 1.8 to 3m alongside in the SE part of the harbor.

1.18 Waterwitch Point (39˚57'S., 143˚51'E.) lies about 1 mile SSE of Currie Harbor. This point is a rocky spit, with depths of less than 11m. The spit extends 1.2 miles SW of the point. In 1995, a depth of 2.7m was reported in position 39 55.7'S, 143 49.7'E. Caution should be exercised while navigating in the vicinity of Waterwitch Point

Waterwitch Reef is located on a bank of foul ground about 1 mile in extent. It lies about 4 miles NNW of Waterwitch Point. A 5.5m patch lies 0.3 mile NW of the reef. A drying rock lies between the reef and the shore.

A conspicuous long sandhill lies about 2 miles SE of Waterwitch Point. British Admiral Reef lies 2 miles SW of Waterwitch Point.

Cataraque Point, about 7 miles S of Waterwitch Point, is bold and cliffy, with a 51m hill close within it.

Anchorage.—Fitzmaurice Bay, about 1.5 miles E of Cataraque Point, affords good shelter in E winds, in about 18.3m, off a sandy beach, on which there is generally a heavy surf. As the wind usually shifts from the E through N, to NW and W, and as the W change is often very sudden, this bay should be used with caution.

The coast between Cataraque Point and Surprise Point, the NW entrance point of Surprise Bay, about 3.5 miles SSE, continues bold and cliffy. Rocks, above and below-water, extend about 0.3 mile off the N shore of the bay. Between Surprise Point and the S entrance point of the bay, there is an above-water rock with sunken rocks around it, over which the sea breaks.

Surprise Bay is used as an anchorage by small coasters and crayfish vessels with local knowledge. It affords good protection in all weather, the sea being broken on the group of rocks in the entrance. The bay should not be entered in strong W winds.

The coast between Surprise Bay and Stokes Point, about 2 miles SE, decreases in height to about 30m. Foul ground, on which the sea breaks heavily, extends up to 0.4 mile off this coast.

Stokes Point (40˚10'S., 143˚55'E.), the S extremity of King Island, is only a few meters high and has the appearance of a group of boulders, over and outside of which the sea constantly breaks. A hill, about 44m high, lies about 0.7 mile N of the point. A few sunken rocks extend about 0.1 mile S of the point.

Stokes Point Light is shown from a white concrete tower, 9m high, about 0.5 mile N of the point.

Caution.—A rocky bank, with a least depth of 18.3m, lies with its shallowest part about 6 miles W of Stokes Point. The sea probably breaks over it in bad weather.

In rounding Stokes Point, care should be taken to give it a good wide berth; the low point and the rocks lying off it appear more distant than they are in reality.

Stanley Rocks and Seal Rock lie on the E and W ends, respectively, of a bank, with depths of less than 20m. Stanley Rocks, about 2.7 miles E of Stokes Point, consists of several rocky patches, some with depths of less than 1.8m. Seal Rock, 3m high, lies about 1.2 miles ENE of Stokes Point. Rocks, the outermost drying and the others sunken, extend about 0.2 mile S of Seal Rock. The ground between Stanley Rocks and Seal Rock is foul, and in stormy weather the sea breaks over the entire area between them.

1.19 East coast of King Island.—Seal Bay is entered between Stokes Point and **Seal Point** (40˚07'S., 143˚58'E.), about 3 miles NW. The latter point is a black rock, about 9m high, with a hummock, 34m high over it; the coast N is backed by a higher range of conspicuous sandy hummocks. An above-water rock, with sunken rocks between it and the coast, lies about 0.5 mile E of Seal Point. A rock, with a depth of 9m, lies about 1.5 miles E of Seal Point. Rocks, which dry about 0.6m, and sunken rocks extend about 1 mile ESE of Middle Point in the center of the bay.

Anchorage.—Seal Bay is exposed to E winds; small coasting vessels never use it as they prefer the safer anchorage in Surprise Bay. The anchorage is in 12.8 to 14.6m, over coarse sand of a loose nature, in the SW part of the bay. There is good shelter in the NE end of the bay for small vessels during N winds, but they should get underway at the first sign of the wind shifting SW. A swell setting into the bay, or indications of an E wind, should be the sign for a vessel to get under way.

A small point, about 2 miles NE of Seal Point, has an above-water rock about 0.2 mile SE of it. The land behind this point rises to Mount Stanley, 213m high, about 3 miles NNW, where King Island attains its greatest elevation.

Brig Rock and **South Brig Rock** (Brig Rocks) (40˚06'S., 144˚02'E.) lie on a shoal which extends about 0.2 to 0.7 mile SSE of a smaller point, about 1 mile farther ENE. Brig Rock,

14m high, and so called from its resemblance to a brig under sail, lies on the N part of the shoal. South Brig Rock, 12m high and remarkable for its black appearance, lies in the S part of the shoal; a few detached rocks lie S of it and the sea breaks about 0.1 mile off its S side.

The coast between Brig Rock and Sandblow Point, about 1.5 miles NE, has several rocks, most above-water, lying about 0.3 mile offshore.

Little Grassy Bay (40˚04'S., 144˚04'E.) lies between Sandblow Point and Jetty Point, nearly 1 mile NE. Main Breakwater extends from Jetty Point to Grassy Island, 4m high, about 0.3 mile SSW; a light is shown from Grassy Island. Inner Harbor, in the NE part of the bay, is sheltered W by Inner Breakwater, which extends about 275m SSE from the shore NNW of Grassy Island.

Omagh Reef, with a least depth of 4.2m, lies in the middle of the entrance between Sandblow Point and Grassy Island. Frog Rock, above-water, lies about 0.2 mile WNW of Grassy Island.

There is turning circle, 304.8m in diameter, with a least depth of 9.1m, between Frog Rock, Grassy Island, and the entrance to Inner Harbor. There is a least depth of 10m in the entrance to Inner Harbor, shoaling rapidly within; a turning circle, with a diameter of 183m and a least depth of 6.1m, lies close within the entrance.

Little Grassy Bay can be entered on either side of Omagh Reef. Two beacons, in line bearing 310˚, from which lights are shown as required, lead in a depth over 10m through the E entrance; two beacons, in line bearing 011˚ and from which lights are shown as required, lead through the W entrance in a depth of about 7.4m. It is reported the Grassy Island Light and both pairs of leading beacons can only be seen from about 1 mile.

1.20 **Bold Head** (40˚03'S., 144˚06'E.), about 2 miles ENE of Jetty Point, is backed by a coastal range, 192m high and thickly wooded. A point, about 0.7 mile SW of Bald Head, has a small detached rock off its extremity; there are a few sunken rocks within 0.1 mile of this point.

Grassy Bay is entered between the latter point and Jetty Point, about 1.5 miles WSW. A hill, 124m high, rises about 0.3 mile within the head of the bay.

Anchorage.—Small coasting vessels, with local knowledge, anchor in Grassy Bay. The village of Grassy lies at the head of the bay.

The coast from Bold Head to the S entrance point of Sea Elephant Bay, about 7 miles N, is almost steep-to. Small sandy beaches vary its rocky character and it is backed by thickly-wooded ranges, about 123m high, which trend NW at the S entrance point of Elephant Bay. A light is shown from the top of a bluff, about 4 miles NNE of Bold Head.

Sea Elephant Bay is entered between **Cowper Point** (39˚50'S., 144˚08'E.) and a point about 6 miles S. Councillor Island (Sea Elephant Rock), 23m high, lies about 1.5 miles E of Cowper Point, at the outer end of a bank, with depths of less than 9.1m; a light is shown from the summit of the island. Sea Elephant Reef, which dries 0.9m, extends about 1.2 miles NNE of Councillor Island.

Caution.—Elephant Shoal, about 3.5 miles long N-S, has a least depth of 5.5m near its N end, about 5.7 miles ESE of Cowper Point. The shoal should be given a wide berth, as the sea breaks heavily on it in strong winds.

A 10m unexamined shoal was reported to lie about 4.5 miles E of the S entrance point of Sea Elephant Bay; an 11m shoal lies about 4 miles ESE of the same point.

A 9.1m shoal was reported about 1 mile E of the S entrance point of Sea Elephant Bay.

1.21 A T-head pier, 223m long, is situated at Naracoopa, about 1 mile NW of the S entrance point of the bay. The head of the pier is 61m long, with depths of 4.9 to 6.7m alongside. Two aluminum-colored oil tanks are conspicuous close S of the root of the pier.

Anchorage.—Sea Elephant Bay provides anchorage during W gales; the wind generally shifts S when the weather is clearing. The bottom throughout the bay is sand, or sand and shells; there is anchorage anywhere, in a depth of about 16.5m. Take care to avoid two disused submarine cables crossing the bay; the cables land about 1 mile N of the pier. In the summer months, there is much E weather, when a swell rolls in.

The coast between Cowper Point and Lavinia Point, about 9.5 miles N, consists of low sand hummocks. Sea Elephant Hill, a double-topped hill, 103m high, and thickly wooded, lies midway along this coast, about 2 miles from the coast. The Sea Elephant River, about 1 mile NW of Cowper Point, is a small stream, accessible at HW to small craft drawing up to 0.9m.

Lavinia Point (39˚40'S., 144˚06'E.), the NE extremity of King Island, is low and sandy. A conspicuous patch of sand lies about 1.5 miles NW of Lavinia Point.

Boulder Point, about 3.7 miles NW of Lavinia Point, is formed from a large granite boulder . Rocks fringe the point; a spit, with a depth of 3.2m, extends about 0.7 mile N.

Anchorage.—A bank has been formed in the vicinity of Boulder Point by the heaping up of sand caused by the meeting of the tidal currents. Coastal vessels often anchor, in about 16.5m, on this bank in W gales. If the gale settles into a W direction, this anchorage is as safe as Sea Elephant Bay, and it is handier for proceeding W when the weather clears.

A conspicuous sand patch lies about 1 mile W of Boulder Point; it is more conspicuous than the one NW of Lavinia Point.

The point, about 2.7 miles NW of Boulder Point, is fringed with rocks, and a hill, 40m high, rises about 0.5 mile SSW of it.

The Doughboy (39˚35'S., 143˚58'E.) lies about 1.7 miles farther NW, and about 1 mile E of Cape Wickham, the N extremity of King Island. It is an above-water rock on the outer end of a drying reef extending about 0.3 mile offshore. The passage between The Doughboy and Navarin Reef, about 1.5 miles N, has irregular depths of 20 to 37m, and is not recommended, as the tidal currents are often strong and cause a race.

Channel between King Island and Tasmania

1.22 The channel between King Island and the Fleurieu Group, about 38 miles ESE, should not be used by vessels without local knowledge except in cases of emergency. The Fleurieu Group is a group of islands, islets, and rocks fronting the NW coast of Tasmania. Only the aspect of Hunter Island and Three Hummock Island, together with the lights on them

and the outer dangers off the W side of Hunter Island, will be described.

Tides—Currents.—The tidal currents set NE with the flood and SW with the ebb in mid-channel between King Island and the Fleurieu Group, at velocities of 1 to 3 knots.

Hunter Island, with **Cape Keraudren** (40˚24'S., 144˚47'E.) at its N extremity, is moderately elevated. Chase Hill, 91m high, its highest point, lies about 3.5 miles S of Cape Keraudren. Its S coast is backed by wooded hills, but the N part of the island has a barren appearance.

Hunter Island Light is shown from a 62m hill, about 6 miles SSW of Cape Keraudren.

Three Hummock Island, with its W extremity about 3.5 miles SE of Cape Keraudren, has a coastal ridge of partially bare and moderately elevated land extending from Hummock Head, its S extremity, to Cape Rochon, its NE extremity. Three hills, from which this island derives its name, rise gradually from this ridge. The S hill, about 1 mile N of Hummock Head, is a conical peak, 236m high, with a conspicuous tower on its summit, and is the most elevated part of the island. The N hill, 168m high and thickly wooded, lies about 1 mile SSW of Cape Rochon, and the third hill, 115m high, lies about 1 mile farther S.

A light is shown about 0.4 mile S of Cape Rochon.

Reid Rocks (40˚15'S., 144˚10'E.) lie on a bank of foul ground, with its center about 12.5 miles ESE of Stokes Point. Reid Rock, the NW and highest rock, is a small dark mass, 12m high, with a drying rock about 0.5 mile E of it. South Reid Rock, 2m high, lies on a patch near the S end of the bank, about 1.7 miles S of Reid Rock.

Bell Reef (40˚23'S., 144˚05'E.), with a depth of about 14m, lies about 15 miles SE of Stokes Point. Bell Reef lies in the way of vessels using the passage S of King Island, and is the more dangerous as the sea only breaks at intervals on it, even with a heavy swell. A shoal, with a depth of 25m, is reported (1983) to lie 7.5 miles SE of Bell Reef.

Black Pyramid, bearing 098˚, leads about 3 miles S of Bell Reef, and Reid Rock, bearing 008˚, leads about 2 miles E of Bell Reef.

1.23 Black Pyramid (40˚29'S., 144˚21'E.), a dark-looking islet with a rounded summit, 73m high, lies about 17 miles W of Hunter Island Light. It is the most prominent of the smaller islets of the Fleurieu Group, and is the first seen by a vessel approaching from the W. Black Pyramid appears to have no off-lying dangers, being steep-to within one mile S, E, and N of it.

Albatross Islet, about 6 miles WNW of Cape Keraudren, is the NW of the Fleurieu Group; it is 38m high and is visible at a distance of about 16 miles in clear weather. The E side is almost a vertical cliff; both sides are steep-to, but a rock with a depth of less than 1.8m, and a rocky patch, with a depth of 4.1m, lie 0.2 mile W and 0.2 mile SSE, respectively, of its S end. Viewed from the NE or SW, a deep notch in the middle of the islet appears to divide it. There are strong tide rips over both ends of the islet during the strength of the tidal currents.

North Black Rock, 10m high and steep-to, lies about 3.5 miles W of Hunter Island Light.

South Black Rock, about 5.5 miles SSW of North Black Rock, is a round mass, 39m high, with a rock, which dries 2.1m, lying about 0.5 mile SW of it; South Black Rock is steep-to except for this rock.

Directions.—The channel between King Island and the Fleurieu Group is not recommended, as there may be undiscovered dangers in it, and the safer passage between King Island and Cape Otway should be preferred. Numerous unexamined detached shoals have been reported in this channel. The sea bed between King Island and the Fleurieu Group is so uniformly level that soundings give no indication of the approach to the dangers, so that at night or in thick weather, the channel between should be approached with extreme caution.

Should it be necessary to enter Bass Strait by this channel, a vessel should keep well S of Bell Reef, observing the clearing marks, and should pass close to Black Pyramid.

Cape Otway to Port Phillip

1.24 The coast from Cape Otway (38˚52'S., 143˚31'E.), previously described in paragraph 1.13, to Franklin Point, about 2 miles E, is low and sandy, with some rocks close off it.

The coast from Franklin Point to Addis Point, about 43 miles NE, consists of high, dark-colored cliffs, backed by thickly-wooded hills extending to within 5 miles of Addis Point. The conspicuous conical peak, about 10 miles NE of Cape Otway, was previously described in paragraph 1.12. Mount Crowley, about 640m high and surmounted by a radio mast with an elevation of 688m, lies about 25 miles NE of Cape Otway, and is the highest point on this stretch of coast.

Hayley Point, about 7 miles NE of Franklin Point, lies midway between Storm Point and Point Bunbury. Hayley Point is only 8.2m high, but close within is a conspicuous green hill, 36m high, on which are the white houses of a town. Little Henty Reef extends about 0.4 mile E of Hayley Point. A rock, 2.7m high lies on both the NW and SE ends of the reef.

Caution.—Henty Reef, with a depth of 5.8m and steep-to, lies about 1.7 miles ESE of Hayley Point. The sea breaks heavily over it in moderate weather.

The position of the reef is indicated by the intersection of the alignment of two pairs of beacons. The SW pair, about 0.3 mile SW of Hayley Point, are in line bearing 277˚; the NE pair, on Point Bunbury, are in line bearing 325˚.

1.25 Apollo Bay (38˚45'S., 143˚41'E.) (World Port Index No. 54100) lies N of Point Bunbury, under a high part of the Otway Range, and extends to the entrance of Skenes Creek, about 2.7 miles NE of Point Bunbury. The bay may be identified by the red buildings of the town of Apollo Bay in its SW part. Point Bunbury is of sandstone formation, 16m high, and reefs extend about 0.3 mile E of the point. A small boat harbor, formed by two breakwaters, lies on the N side of Point Bunbury.

Lights, in line bearing 016.5˚, situated about 0.5 mile W of the entrance to Skenes Creek, lead W of Henty Reef and E of the dangers off Hayley Point and Point Bunbury.

The limits of the port of Apollo Bay are bounded on the S by the alignment of the Hayley Point beacons extended about 1.5 miles from the coast and on the E by a line drawn 016.5˚ from the offshore end of the S limit to the entrance of Skenes Creek.

Anchorage.—There is anchorage, during W or SW gales, in Apollo Bay, in about 11m, from 0.6 to 0.8 mile offshore, with

good holding ground of shale with holes filled with sand. There is usually a swell in the bay, which is especially heavy during E or S winds. Vessels must be prepared for a change of wind to the S or SE.

Exercise caution when anchoring in the N portion of the bay, as a disused submarine cable lies here.

An explosives anchorage is established within a circle with a radius of 300m, centered 202˚, 1.7 miles from the front approach leading light.

1.26 Cape Patton (38˚42'S., 143˚50'E.), about 8.5 miles ENE of Point Bunbury, is bold, dark-looking, and wooded, except on its W side. Mount Sabine, 583m high, about 6.5 miles NW of Cape Patton, is the second highest peak on this coast. A tower, 38m high, stands on a summit about 3 miles S of Mount Sabine.

Point Grey, a low, grassy projection, lies about 11 miles NE of Cape Patton. A radio tower, 30m high, with an elevation of 152m, lies about 0.7 mile W of Point Grey. Mount St. George, a prominent conical hill, 200m high, lies about 1 mile SW of Point Grey.

A drying reef extends about 0.2 mile E of Grey Point; Loutit Bank, with a least depth of 11m, extends about 1 mile farther E.

Loutit Bay lies N of Point Gray; the town of Lorne borders the shore of the bay. Lorne Pier, marked by a light at its head, extends NE from the shore on the NE side of Point Grey.

The port of **Lorne** (38˚33'S., 143˚59'E.) (World Port Index No. 54090) is bounded by a circle of 1 mile radius, centered on the head of the pier.

Depths of less than 5.5m extend up to 0.3 mile off the shore of the bay.

Anchorage.—Anchorage, during SW or W gales, may be obtained in Loutit Bay, NW of Loutit Bank, in 9.1m, about 0.6 mile offshore. The anchorage in this bay is preferable to that in Apollo Bay, as there is less swell due to the protection afforded by Loutit Bank. During W gales, vessels should be prepared for a change of wind, as it often backs to a S direction.

An explosives anchorage is established within a circle with a radius of 300m, centered 015˚, 1,500m from Lorne Pier Light.

1.27 Split Point (38˚28'S., 144˚06'E.), about 7.5 miles NE of Point Grey, is of a reddish-brown color and appears like three cliffs close together, divided by dark ravines. A light is shown from Split Point. A depth of 18m lies 1.2 miles SW of Split Point.

Eagle Nest Reef, awash, extends about 0.5 mile offshore, about 0.6 mile NE of Split Point.

The coast between Split Point and Addis Point, about 8.5 miles ENE, consists of two bights separated by Roadknight Point, which is low. Mount Inglesby, 121m high, lies about 1.5 miles NW of Roadknight Point; a radio tower, 30m high, lies 0.2 mile ESE of Mount Inglesby. A chimney, with an elevation of 118m, is conspicuous about 2.5 miles N of Roadknight Point. Addis Point lies at the E end of a conspicuous yellow bluff, about 30m high.

Ingoldsby Reefs, between Roadknight Point and Addis Point, are two drying reefs surrounded by sunken rocks, over which the sea breaks heavily. These reefs are steep-to on their seaward side, and lie about 0.7 mile offshore. Black Rock, which dries, lies about 0.6 mile SW of Addis Point, and is steep-to on its seaward side.

The coast for about 2 miles NE of Addis Point is fronted by cliffs, about 61m high, then for about 1.2 miles farther NE by cliffs, about 30m high.

Point Danger, about 5 miles NE of Addis Point, has a reef, with depths of less than 1.8m, extending about 0.3 mile E and S of it. The town of Torquay, its houses are visible from seaward, lies close N of Danger Point.

The coast between Danger Point and Barwon Head, about 9 miles ENE, consists of low sand hills, backed by undulating hills. This coast is fronted by reefs over which the sea breaks heavily, and by a shoal extending up to 1 mile offshore.

Victoria Reef, with a depth of 4.6m, lies about 1.2 miles ESE of Point Danger.

Ant Spit, with a depth of 4.6m, lies about 2.5 miles W of Barwon Head.

Claremont Reef, a detached 2.7m patch, lies about one mile SW of Barwon Head. The sea breaks heavily over the above shoals.

An area of foul ground, due to sunken vessels, is centered about 5 miles SW of Barwon Head. The area is 3 miles in diameter and is known locally as The Graveyard.

Barwon Head (38˚18'S., 144˚30'E.) is a saddle-shaped summit, 37m high, scrub-covered, with a metal beacon, 4.6m high, on its summit. The town of Barwon Head lies close NW of the headland, and on the W bank of the Barwon River. The town and headland appear as an island from seaward due to the low land in the vicinity. The river, accessible to boats, has rocky ground extending across its entrance, from which a spit, with a depth of 2.7m, extends about 0.7 mile E. A conspicuous tower, visible at a distance of 15 miles, lies about 2 miles NE of Barwon Head.

An overhead power cable, with a vertical clearance of 22m, spans the river near Barwon Jetty, and a submarine cable crosses the river close N of a bridge. The bridge is situated about 0.5 mile N of Barwon Head.

The coast from Barwon Head to Point Lonsdale, about 5.5 miles E, forms a bight, known locally as Abrahams Bosom, where vessels standing off Port Phillip seek shelter during W gales. The bight is fronted by sand dunes, 26m high, and a continuous rocky bank extends up to 0.5 mile offshore. From the outer edge of the latter bank, the depths increase gradually to depths of 20m about 1 mile offshore. A reef, with rocks above and below water, extends about 0.5 mile offshore from a point about 1.7 miles WNW of Point Lonsdale.

Port Phillip

1.28 Port Phillip (38˚18'S., 144˚38'E.) is an extensive bay, with a length of 31 miles to its N end, where it contracts, forming Hobsons Bay, in which is located the important port of Melbourne. On the W side of Port Phillip is Western Arm, in which is the port of Geelong. The outer part of the entrance to Port Phillip, or The Heads, is bounded by Point Lonsdale and Shortland Bluff, about 2.5 miles ENE, on the NW side, and by Point Nepean, about 2 miles ESE of Port Lonsdale, on the SE side.

Port Phillip is bounded seaward by a circle, with a radius of 3 miles, centered on Point Lonsdale, and within The Heads, by

Port Phillip Heads

the navigable rivers and creeks flowing into Port Phillip, other than those comprising the limits of the ports of Melbourne and Geelong.

Within Point Nepean, the entrance to Port Phillip is deep and free from dangers for about 2 miles, then it widens and is filled with numerous sandbanks and shoals, extending about 7 miles NE and 11 miles ESE. Four navigable channels lead between the banks and shoals; in order of importance they are South Channel, West Channel, Coles Channel, and Sorrento Channel. Symonds Channel is only available to vessels with local knowledge.

Vessels with a draft of 11.6m can be navigated through The Heads and South Channel at all stages of the tide.

Vessels with a maximum draft of 12.1m may be navigated through The Heads when tide and weather conditions are suitable. Caution is necessary during periods of high and long period swells from S, as these swells may considerably reduce a vessel's underkeel clearance when passing over Rip Bank and Nepean Bank.

Vessels with a maximum draft of 12.1m may be navigated through South Channel when the tidal rise is sufficient to provide the vessel with an underkeel clearance of 1.5m.

Tides—Currents.—The tidal rise at The Heads is 1.4m at MHHW, and 1.3m at MLHW.

Due to the narrow entrance and the large area of Port Phillip, the range of tides within The Heads is small in comparison with that at the entrance; water level within the port is affected by winds blowing for a long period in one direction, and may remain above mean level continuously for some time after S gales, or below mean level continuously for some time after N gales.

The tidal currents in the entrance depend on the relative water levels inside and outside Port Phillip. The greatest difference in water levels occurs at about the time of HW and LW in the entrance, and the tidal current therefore runs at its strongest, 5 to 8 knots, at these times. Slack water occurs at about 3 hours before and after HW in the entrance when there is no difference in the levels; the tidal current runs, as follows:

1. Flood—From about 3 hours before until 3 hours after HW.
2. Ebb—All other times.

However, as the levels depend partly on wind, the times of slack water and the velocity of the tidal current are also affected by the wind; freshets may also affect the tidal current. On an average, it is HW at The Heads about 3.3 hours before that at Williamstown, but due to weather conditions this interval may vary from 3 to 4 hours. It will therefore be approximately slack water following the flood current at The Heads when it is HW at Williamstown.

The flood current from the S and E increases in strength as it nears The Heads; it sets right into the entrance, across and through the reefs, with great force, and spreads towards Shortland Bluff and Point King.

The ebb current sets toward Victory Bight between Point Lonsdale and Shortland Bluff, and then out the entrance at a great rate. The body of this current sets athwart the entrance towards Point Nepean, and away SE along the land and into the shore between Point Nepean and **Cape Schanck** (38˚30'S., 144˚53'E.).

In South Channel, the flood current sets through at a rate of from 1 to 1.2 knots, and strongly over the N banks; the outgoing current sets through at a rate of from 0.7 to 2 knots, and strongly over the S banks. In the dredged area, the tidal currents follow the direction of its axis, but immediately outside its ends they set obliquely to the direction of its axis.

Aspect.—Flinders Peak (37˚57'S., 144˚25'E.), 335m high, about 22.5 miles NNE of Point Lonsdale, is the most conspicuous feature on the W side of Port Phillip. The peak, cone shaped and of granite formation, is the highest of four peaks of The You Yangs, a range overlooking the port of Geelong; a red flashing obstruction light is shown from its summit. From SW, the peak may be seen after passing Split Point, and with **Arthurs Seat** (38˚21'S., 144˚57'E.), about 15 miles ESE of Point Nepean, forms a good guide for identifying the entrance to Port Phillip. Arthurs Seat, 319m high, with a tower on its summit, is a conspicuous mountain, which shows up for a considerable distance outside The Heads.

Point Lonsdale (38˚18'S., 144˚37'E.), the W entrance point of Port Phillip, is a dark, rocky point, 12m high. A light is shown from the point. The signal station at the light is equipped with radiotelephone. Point Lonsdale has been reported to give good radar returns at 14 miles. A Port Information Service is maintained at Point Lonsdale.

Lonsdale Reef, drying in places, extends about 0.3 mile SE of Point Lonsdale. Lonsdale Rock, with a least depth of 6.7m, lies about 0.6 mile SE of the same point; the position of the rock is discernible by the oily appearance of the water due to kelp growing on it.

Shortland Bluff, about 2.5 miles ENE of Point Lonsdale, is formed of yellow sandstone and is 20m high; it can be recognized by the lighthouses and towers on it, and by the buildings of the town of Queenscliff. A drying reef extends about 0.1 mile SE of the bluff, and is marked at its outer end by Ball Beacon, 1.8m high.

Victory Shoal, with a least depth of 3m, lies in the middle of the bight between Point Lonsdale and Shortland Bluff. There are other dangers in the bight and it should be avoided.

Point Nepean, nearly 2 miles ESE of Point Lonsdale, is 33m high, and the W termination of a peninsula extending WNW from Arthurs Seat. It may be recognized by the buildings on it and by a white triangular beacon with a red top, 6.1m high, on its W fall. Point Nepean has been reported to give good radar returns at 19 miles.

Monash Light is shown at an elevation of 48m, about 1.5 miles SE of Point Nepean.

Monash Light

A drying reef, marked near its outer end by Nepean Rock Beacon, extends about 0.2 mile WNW of Point Nepean. Nepean Reef, with Big Rock, a drying rock, at its extremity, extends about 0.2 mile farther WNW.

Corsair Rock, with a depth of 2.4m, lies about 0.3 mile W of Nepean Rock Beacon. Corsair Rock is marked by an eddy on the flood current, and by a short breaking sea on the ebb, from which a tide spume extends about 1 mile SE.

Depths of less than 10m extend about 0.6 mile WNW of Point Nepean.

Two shoals, known as Five Fathom Banks, with depths of 9.1 and 10.6m, on which the sea breaks heavily, lie about 0.7 mile and 1.7 miles SSE, respectively, of Corsair Rock.

Pilotage.—Pilotage is compulsory for merchant vessels, except those specially exempted.

All pilotage within Port Phillip is supplied by the Port Phillip Sea Pilot Service. A pilot station, equipped with radar, is situated at Queenscliff (close to Port Phillip Heads) and pilots board vessels direct from fast launches, 3 to 5 miles SW of Point Lonsdale.

Vessels exempt from pilotage, on reaching pilotage waters, display a large white flag at the mainmast head.

Low-powered vessels and vessels with a draft exceeding 10.4m should radio the pilot vessel as to a suitable time to arrive at the boarding ground as passage through the entrance is governed by the tidal currents.

Vessels requiring pratique or quarantine service should radio the quarantine officer not more than 24 hours and not less than 12 hours before arrival, with the following information: Name of vessel, ETA, number of passengers and crew, passengers disembarking, port of departure and date, and any disease on board.

The Health Department will clear vessels between 0600 and 2200. The appropriate signal should be displayed.

The quarantine station extends along the S shore of Port Phillip between Observatory Point and Police Point, about 1.2 and 2.2 miles ESE, respectively, of Point Nepean, with its boundaries marked at each end by a flagstaff.

Signals.—The "Port Closed" signal, described in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia, is displayed by day from the masthead of the flagstaff at Point Lonsdale, and is shown at night from Point Lonsdale Light below the main light.

The following additional signals are used, when required, to indicate that entrance to Port Phillip is temporarily closed.:

1. By day—A red pennant above a black ball at the masthead of the Point Lonsdale Signal Station
2. At night—Three green lights, vertically disposed, at Point Lonsdale Light.

The following are extracts from the port rules:

1. To avoid risk of collision and danger at The Heads, traffic will be regulated in certain circumstances by means of the following signals shown from the Point Lonsdale Signal Station:
   a. By day—Three drums at the yardarm of the mast, vertically disposed, means the entrance is closed to inbound traffic and to outbound traffic from the West Channel.
   b. At night—Green flashing light on tower of lighthouse means the entrance is closed to inbound traffic and to outbound traffic from the West Channel.
   c. By day—Fourteen drums at the yardarm of the mast, vertically disposed, means the entrance is closed to outbound traffic.
   d. At night—Red flashing light on tower of lighthouse means the entrance is closed to outbound traffic.
2. During the display of the first day-night signal, no vessel shall enter the port from sea, and no outbound vessel from the West Channel shall proceed S of a line bearing 109° from Shortland Bluff Low Light.
3. An inbound vessel shall not shape a course for South Channel dredged cut while an inbound tanker is navigating between Lighted Buoy No. 5 and Buoy No. 16.
4. An inbound vessel shall not shape a course for South Channel dredged cut while an outbound tanker is navigating between Hovell Pile Light and Lighted Beacon No. 10.

Tidal current signals are shown at night from Point Lonsdale Light, as follows:

Signal	Meaning
Green light	Flood current from end of slack water to HW

Signal	Meaning
Two green lights, vertically disposed	Flood current continuing after HW to beginning of slack water
Red light	Ebb current from end of HW slack to LW
Two red lights, vertically disposed	Ebb current continuing after LW to beginning of LW slack

Regulations.—The Victorian Channels Authority (VCA) is responsible for the provision and management of channels for commercial shipping in the waters of Port Phillip including the channels of Melbourne and Geelong, Port of Portland and the Port of Hastings. It is also responsible for ensuring the safe and efficient passage of vessels through its harbor control function. Mariners should consult the VCA Port Operations Handbook and Harbor Master's Directions publications, which can be found online, for the very latest information.

Victorian Channels Authority

http://www.vicchannels.vic.gov.au

The following regulations are in effect for the navigation of outbound deep-draft vessels:

1. Outbound deep-draft vessels (vessels with a draft over 8.8m) shall:
   a. Prior to, or upon departure from the berth or anchorage, advise Point Lonsdale Radio Station by VHF or other suitable means of the vessel's ETA at The Heads, and, during the course of the voyage, advise of any changes to the estimated ETA.
   b. Upon arrival at South Channel Lighted Buoy No. 5, display, by day, a black cylinder, not less than 0.6m in diameter and not less than 1.1m high where it can best be seen, and at night, three red lights, vertically disposed, and 1.8m apart, where they can best be seen, visible all round the horizon at a distance of at least 5 miles.
2. The Point Lonsdale Signal Station, as soon as circumstances permit, will exhibit the "Port Closed" signal meaning, the entrance is closed to inbound traffic and to outbound traffic from West Channel.
3. Outbound deep-draft vessels shall not proceed beyond the West Entrance range line until the signal in 2 is displayed from the Point Lonsdale Signal Station.
4. Any vessel proceeding into Port Phillip, and which has reached a position within The Heads, at a time when the signal in 2 is shown at the Point Lonsdale Signal Station, shall not proceed beyond West Channel Range Line until such time as any outbound deep-draft vessel, showing the signal prescribed in 1b, has reached a position W of Lighted Buoy No. 1.
5. Outbound deep-draft vessels, having cleared The Heads, shall cease to exhibit the signal prescribed in 1b, and the Point Lonsdale Signal Station shall cease to exhibit the signal prescribed in 2 as soon as the passage of outbound deep-draft vessels permit.

To avoid the risk of collision and other dangers due to the necessity of passing close to oil tankers in confined waters, vessels shall not attempt the navigation of The Heads while an oil tanker is passing through. To aid in the observation of this rule, the precautions represented by the following signals must be strictly adhered to:

1. Oil tankers inbound through The Heads by day or at night, before shaping a course for the fairway through The Heads shall:
   a. Advise the Point Lonsdale Signal Station that it is ready to proceed and shall not proceed until the station, by day, displays a signal of four drums, vertically disposed, or at night, exhibits a red flashing light; these signals indicate the entrance is closed to outbound traffic.
   b. Display, by day, flag "B" of the International Code, and at night, exhibit a red light, not less than 6.1m above the deck and visible all round the horizon at a distance of at least 5 miles.

2. Oil tankers outbound through The Heads by day or at night shall:
   a. Prior to, or upon departure from the anchorage or berth, advise Point Lonsdale by VHF or other suitable means of the vessel's ETA at The Heads, and, during the course of the voyage, advise of any change to such ETA.
   b. While in the waters of the port of Port Phillip, display the signal described in paragraph 1b. Upon arrival at South Channel Lighted Buoy No. 5 , the vessel shall advise the Point Lonsdale Signal Station of its readiness to proceed, and shall not proceed W of West Channel range line until the station, by day, displays a signal of three drums, vertically disposed, or at night exhibits a green flashing light; these signals indicate the entrance to the port is closed to inbound traffic, and to outbound traffic from West Channel.
3. The entrance is open to normal traffic when the Point Lonsdale Signal Station ceases to display the signals mentioned above.

Mariners are cautioned to avoid vessels employed in blasting and sweeping opeations that are deepening the fairway at the entrance to Port Phillip. The following flags of the International Code of Signals will be displayed at the masthead of the attendant vessel:

1. B—On blasting work.
2. HF—On sweeping and survey work.
3. OW—Approaching vessels should stop for a few minutes until the charge has been exploded and watch for instructions.

If the above flag signals are not clearly visible, the attendant vessel will make the following by signal lamp:

1. WAIT—the equivalent of the flag signal OW.
2. PROCEED—the equivalent of lowering of all flag signals.

No vessel shall approach the attendant or blasting vessels nearer than 1 mile.

The speed of navigating the dredged portion of South Channel must not exceed the minimum to preserve steerageway.

Port Phillip—Entrance Channel and Ranges

1.29 The entrance channel at The Heads is nearly 2 miles wide, but reefs and shoals reduce the navigable width to about 0.6 mile.

Vessels with a draft of 11.6m can navigate through The Heads and South Channel at all stages of the tide. Vessels with drafts between 11.6 and 12.1m may navigate through The Heads and South Channel, described in paragraph 1.31, when the tide, swell, and weather conditions are such to provide the necessary underkeel clearance of 0.9m.

Caution.—A provisional limiting depth of 10.3m was declared in 1992 for Port Phillip for favorable entry and departure. For latest details on depths, vessels should contact the port authority.

Rip Bank, a rocky flat with depths of 8.8 to 18m, extends across the entrance close outside The Heads. The depths increase outside the bank, and on the inner side of the Rip is Entrance Deep, a trench that runs across has depths of 47 to 94m and extends onto the range line of Great Ship Channel, about 0.9 mile WNW of Point Nepean. This inequality of depth, combined with tidal currents, which at times have a rate of 5 to 8 knots, cause a race, known as The Rip, which, during or immediately after a SW gale, breaks so heavily as to be dangerous to small vessels.

There are four channels into Port Phillip, between The Heads, and a channel, known locally as Clarkes Channel, which leads from the SE, as follows:

1. **Great Ship Channel**, the main channel, has a provisional declared depth in 1999 of 14m. Shortland Bluff Low Light, in line bearing 042.5˚ with Shortland Bluff High Light, leads through Great Ship Channel. A conspicuous green water tower lies close N of Shortland Bluff High Light.
2. **Western Channel** had provisional declared depths, in 1999, of 11.4m on its E side and 10.3m on its W side. The W limit is marked by Hume Tower Light, in line with Shortland Bluff High Light, bearing 046˚. A flagstaff, in line with Shortland Bluff High Light, bearing 044˚, marks the E limit of the channel.
3. **13.1m Channel** is located on the E side of Great Ship Channel. Its W limit is marked by the alignment of Shortland Bluff High Light with a beacon standing close S of Shortland Bluff Low Light, bearing 041˚.
4. **Eastern Channel** has a declared depth of 11.9m in 1999. The port authorities should be consulted for the latest details on channel depths. The W limit is marked by Murray Tower Light and Shortland Bluff High Light, in line bearing about 039˚. Its E limit is marked by Murray Tower, in line with Lookout House, bearing about 035˚; Lookout House lies close W of Shortland Bluff High Light. Shoal depths of 10m exist on Nepean Bank, W of this transit. These shoals can be cleared, by day, by keeping the W edges of Low Light in transit with the E edge of Queenscliff water tower, bearing 036.2˚. There is no night time demarcation of the W edge of the shoal area.
5. **Clarkes Channel**, marked by Clarkes Beacon and Marcus Hill Beacon, in line bearing about 339.5˚, has a least depth of 12.8m, but leads close W of Five Fathom Banks. Clarkes Beacon lies about 1.2 miles NNE of Point Lonsdale. Marcus Hill Beacon stands about 2 miles NNW of Clarkes Beacon. A radio mast stands about 0.2 mile WSW of Clarkes Beacon.

Clarkes Channel should only be used when the fairway between The Heads is clear of traffic. Inbound vessel on a flood will experience an onshore set. An outbound deep draft vessel should not use Clarkes Channel but the Great Ship Channel.

Directions.—A vessel should not attempt to enter The Heads at night without a pilot or against the outgoing current, which sets across the entrance and at springs attains a velocity of 7 to 8 knots, causing a high, short, confused sea. In S or W gales, the sea breaks right across the entrance between The Heads.

Port Phillip Bay

A vessel may scend or dip below the ordinary water level during high seas, and great caution should be used by outbound deep-draft vessels; under these conditions it is recommended to leave only on the last quarter of the incoming current or at the SW following.

From the SW, vessels usually make the high, bold land of Cape Otway, which it is desirable to round at a distance of not less than 3 miles. Then course may be set for Port Phillip Heads, passing about 3.5 miles outside Henty Reef. All other dangers are cleared by giving the coast a berth of not less than 3 miles.

If Cape Otway should be rounded early in the evening with a fresh S wind, beware of overrunning the distance, as a strong current after a prevalence of S gales often sets NE along the coast. Bearings of Split Point give a good check.

After passing Split Point, if the weather is at all clear, Arthurs Seat will be seen rising inland before the lower and nearer land in that direction becomes visible; this mountain, in conjunction with Flinders Peak, should enable the vessel to identify the entrance to Port Phillip. Proceeding onward, the land about Cape Schanck will be seen E, appearing at first like a long low island trending SE. On nearing the entrance, Barwon Head will open out on the port bow. This headland is a good mark for making Port Phillip, but in poor visibility care should be taken not to mistake it for The Heads, vessels doing so have gone ashore.

When the lighthouses on Shortland Bluff are sighted, a deep-draft vessel should shape course for the entrance of Great Ship Channel and enter on the previously-described range line. When the beacon on Point Nepean bears about 140˚; or when Barwon Head is just open of Point Lonsdale, bearing 271˚, course may be altered for South Channel or West Channel.

From the S and E, vessels usually make the land about Cape Schanck, which cannot be mistaken due to its bold character and the lighthouse on its summit. It is recommended to sight Cape Schanck before getting far into the bight of Port Phillip, and should the wind blow strong from the S, it is not safe to proceed without sighting the cape. Having passed, a good offing should be given in approaching The Heads until Shortland Bluff lighthouses open out, the intervening land near Point Nepean preventing their being seen before Shortland Bluff High Light bears 014˚, and Shortland Bluff Low Light bears 011˚. Then enter Great Ship Channel, as previously directed.

A vessel from the E may enter through Clarkes Channel, with Clarke Beacon in line with Marcus Hill Beacon, bearing 339.5˚. This alignment leads very close W of Five Fathom Banks. This channel may only be used when the fairway between The Heads is clear of traffic. A vessel of deep-draft should not leave by Clarkes Channel, but should proceed through Great Ship Channel. A vessel entering Clarkes Channel on the flood should guard against the onshore set.

At night, having passed 3 to 4 miles off Cape Schanck Light, a vessel should steer to make the white sector of Point Lonsdale Light, and keep in that sector until Shortland Bluff range lights are sighted. The vessel then should proceed through Great Ship Channel as previously directed.

Port Phillip—South Shore

1.30 Two shoals, with depths of 4.2m and 7.6m, lie about 0.3 mile and 0.7 mile ENE, respectively, of Point Nepean (38˚18'S., 144˚39'E.).

Observatory Point, about 1.2 miles E of Point Nepean, is marked close SE by a white beacon, 10.7m high. A radar tower stands at the head of Nepean Bay. Cheviot Hill, about 0.7 mile SW of Observatory Point, consists of bare limestone.

The coast between Observatory Point and Police Point, about 1.2 miles ESE, is steep-to. The quarantine station is situated about midway along this section of coast. A red brick chimney, 24.4m high, and a light are situated close E of the quarantine buildings.

A conspicuous flagstaff, with a group of green-roofed buildings E, stands on Point Franklin, about 0.7 mile ESE of Police Point. Point Macarthur, about 0.7 mile farther ESE, is sheer and 24m high. Point King, about 0.2 mile farther ESE, is fringed by rocks, and a white beacon, 5m high, stands on it.

The Sisters, about 1.7 miles SE of Point King, is a conspicuous double point of limestone, 18.3m high, with a sandy beach between. The town of Sorrento lies midway along this coast.

White Cliffs (38˚22'S., 144˚49'E.), about 2.5 miles ESE of The Sisters, is a white cliff, 24m high, and the most remarkable feature on this coast.

Sorrento Channel forms the approach to the jetty at Sorrento, and lies between the S shore and South Sand, the extensive bank E of Point King. The passage is marked by a range light and by pile beacons. Its NW entrance is obstructed by a bar, with a depth of 2.4 to 3m, and a vessel approaching the entrance should pass between two beacons moored 275m E and 450m ESE, respectively, of Point King.

A disused light, 34m high, stands in McCrae (38˚21'S., 144˚56'E.), at the foot of Arthurs Seat.

Eastern Light (38˚21'S., 144˚56'E.), about 5.5 miles ENE of White Cliffs, is shown from a white metal tower, 34m high, at the foot of Arthurs Seat.

The shore bank, from about 1.5 miles W of White Cliffs to about 1.5 miles ENE of Eastern Light, is marked by numerous white beacons lying between 0.2m and 0.4 mile offshore.

Martha Point (38˚18'S., 144˚59'E.) lies about 5 miles NE of Eastern Light. Mount Martha, 159m high, about 1 mile E of the point, is the highest summit of a wooded, flat-topped ridge extending about 3 miles NE of the point.

South Channel

1.31 South Channel, a continuation of Great Ship Channel, lies between Great Sand and Middle Ground, on the N side, and South Sand, on the S side. The channel is marked by lights, lighted buoys, and unlighted buoys. Work was in progress on dredging and realigning the South Channel. Buoys will be removed from within the new channel alignment as works progress. Until the lights have been established, the pile will be marked by temporary lights.

Popes Eye Bank, with a least depth of 2.4m, lies about 2 miles E of Shortland Bluff. Wedge Light is shown from the center of the shoal. A spit, with depths of less than 10m, extends about 0.7 mile SW of Popes Eye Bank; Popes Eye Buoy is moored at the SW end of the spit.

A wreck, with a depth of 13.4m, lies about 1.1 miles SSW of Lighted Beacon No. 2; a second wreck, with a depth of 18.3m, lies about 1.6 miles ESE of the same light.

Nicholson Shoal, with a least depth of 6.1m, extends to about 1 mile N of Police Point. It is marked NE by Lighted Buoy No. 1.

Great Sand lies with its SW extremity about 1 mile SE of Wedge Light; from this position it extends about 9 miles ESE and 5.5 miles NE. The Mud Islands, 1.8m high, are a group of three islands lying near the middle of the NW side of Great Sands. The middle island of the three is a bird sanctuary, a breeding ground where petrels are matured. Caisson M, a conspicuous concrete structure, on which is a wooden hut, stands about 0.4 mile E of the SW end of Great Sands.

Depths of less than 10m extend about 0.7 mile SSW and 1 mile SE of Caisson M. Dredging takes place periodically over these shoals.

A dredged channel, with a depth of 12.5m, is entered between Lighted Beacon No. 1 and Lighted Beacon No. 2.

Middle Ground is the E part of Great Sand, E of Pinnace Channel. South Channel Fort, with an elevation of 7m, lies about 3.7 miles ESE of Caisson M.

South Channel Pile (38˚20'S., 144˚51'E.) is a white round house on piles, 8.2m high, on the S side of South Channel, about 0.5 mile E of the E end of South Sand. A 5.2m patch lies about 0.1 mile NNE.

A dredged channel, with a depth of 12.5m, is entered between Lighted Beacon No. 15 and Lighted Beacon No. 16 and extends E to Lighted Beacon No. 18.

Hovell Pile Light, situated about 2.2 miles E of South Channel Pile Light, marks the E end of Middle Ground. The new light is shown from a structure situated about 275m E of the old structure.

Anchorage.—Anchorage may be obtained off Queenscliff outside the prohibited area described below, and as close as possible to the NW side of the channel in order to keep the fairway to West Channel clear. The best berth is in about 10.6m, about 0.5 mile E of Shortland Bluff High Light and within the red sector of Low Light.

When compelled to anchor off the quarantine station due to quarantine regulations, S gales, or other causes, a vessel drawing more than 6.1m should anchor N of the station, in 12 to 15m, from about 0.3 to 0.6 mile N of the Quarantine Station Light. At night, a vessel should anchor in the white sector of the Quarantine Station Light, preferably with that light bearing 180˚.

Good anchorage, clear of the fairway, may be obtained, in 11.3 to 13.1m, at the S end of Symonds Channel, about 0.5 mile SE of Wedge Light (38˚17'S., 144˚42'E.).

It is not advisable in bad weather to anchor in either South Channel or West Channel, due to the strength of the tidal currents and the loose nature of the bottom.

Capel Sound, S of the E end of South Channel, affords safe anchorage, about 0.7 mile SSE of South Channel Pile Light, and clear of the prohibited area. The anchorage offers a of depth of 12m, sand, and is covered by the green sector of South Channel Pile Light.

A charted prohibited anchorage area, excluding the anchorage of small boats, encompasses the E terminus of S channel; the area is marked by buoys. A mussel bed lies 3.6 miles ENE of Hovell Pile Light.

Caution.—The speed of a vessel through the dredged cut must not exceed the minimum for safe steerageway. Caution is necessary here as the tidal currents immediately W of the dredged area set obliquely to its axis. Dredges may frequently be found at the E end of the dredged cut.

Port Phillip—West Shore

1.32 Drapers Reef, with a least depth of 0.6m, extends about 0.4 mile NE of Shortland Bluff (38˚17'S., 144˚39'E.), and is marked by a buoy. About 0.5 mile farther NE, a dredged channel leads to a boat haven N of Queenscliff. The boat haven is bounded on its W side by a bridge connecting Queenscliff to Rabbit Island, and then by another bridge to the SW end of Swan Island.

Swan Island (38˚15'S., 144˚41'E.) is low and marshy in its central part, with wooded ridges about 12.2m high, E and W. Depths of less than 5m extend up to 0.7 mile off the SE side of the island. Swan Spit, with depths of less than 1.8m, extends about 0.7 mile S of Swan Point, the NE extremity of Swan Island. Swan Bank, with depths of less than 5m, extends about 0.3 mile E of Swan Spit; the edge of this bank is subject to frequent change. Swan Beacon stands about 0.7 mile SW of Swan Point.

A charted area encompassing Swan Island has been designated as Naval Waters by the Commonwealth of Australia.

Swan Bay, NW of Swan Island, is mainly filled with mud flats.

From Edwards Point, the N entrance point of Swan Bay, to South Red Bluff, about 2.2 miles NNE, the shore is wooded, with lagoons close within it.

South Red Bluff, about 12.2m high, is conspicuous because of its reddish color; a beacon is shown from the summit.

A jetty, fronting the town of St. Leonards, about 1 mile farther NNE, has a berth, 119m long, with a depth of 3m at the outer end on its N side. A curved breakwater extends S from the head of the jetty and affords shelter for small craft.

Indented Head, about 1.5 miles N of St. Leonards, is a wooded point, 3m high. Governor Reef, which dries, lies about 0.5 mile SE of Indented Head.

The coast between Indented Head and Point George, about 1.2 miles NW, is low and wooded, above which the roofs of houses may be seen.

Point George (38˚08'S., 144˚42'E.) is low and grass-covered; it may be recognized by a solitary beacon on its summit. White Woman Rock, a basalt boulder, 1.2m high, lies close off the point.

Prince George Bank, with depths of less than 1.5m, fronts the coast from St. Leonards to Point George, and extends about 2 miles NE of the latter point. A light is shown from the NE extremity of the bank; a racon is situated at the light.

West Channel

1.33 West Channel had a least depth of 5m, sand and shells, in 1998, but during spells of E or N winds the depths may be less. The banks and shoals in West Channel are subject to frequent change, and the latest information should be ob-

tained from the Department of Ports and Harbors before proceeding through this channel.

West Channel is marked by odd-numbered lights and buoys on its SE side and by even-numbered lights, beacons, and buoys on its NW side.

West Channel is entered in an ENE direction, passing N of Popes Eye Bank, and passing either N or S of **Royal George Shoal** (38˚16'S., 144˚42'E.). The latter shoal, with a least depth of 4m, lies about 1 mile SSE of Swan Beacon. The channel then continues in the same direction until Wedge Light, on Popes Eye Bank, bears 204.5˚ astern, and in line with Monash Light. This range leads W of the SW end of West Middle Sand, which is marked by a buoy, and leads E of a 4m shoal located nearly 1 mile SE of Swan Beacon. The range then leads between William Sand and West Sand. No. 9 Light and No.11 Light are situated on the NW side of William Sand, about 1.4 miles NE and 2.2 miles NNE, respectively, of Swan Point. Grimes No. 10 Light, about 2.9 miles NE of Swan Point is located on the E side of West Sand. Keep Swan Point, in line with a beacon about 0.3 mile SW, and with Shortland Bluff High Light bearing 226˚ astern; this range leads through the N part of West Channel. West Channel Pile Light lies at the NE end of West Sand, on the W side of the N entrance to the channel.

Inbound vessels are recommended to enter West Channel S of Royal George Shoal, and outbound vessels N of the shoal.

Attention must be paid to the tidal currents which do not set evenly through the channel, particularly off Swan Bank and the N end of the channel.

Coles Channel

1.34 Coles Channel lies between West Sand and the shore between Swan Point (38˚15'S., 144˚42'E.) and The Bluff, about 3.5 miles NNE. The channel has a least depth of 3.4m on the range line, and is used by coasters.

Coles Channel is approached from West Channel in a NW direction. When Coles Light, about 0.3 mile NNE of Swan Point, bears 195˚ astern, and in line with Monash Light, the vessel should alter course N with these lights in range astern, passing W of the beacons on the E side of the channel. It should be noted that the range line passes close W of the S part of West Sand, with a least depth of 0.3m. When abreast of St. Leonards, course should be altered NE to pass SE of Prince George Bank.

Port Phillip—East Shore

1.35 The coast between **Martha Point** (38˚18'S., 144˚59'E.) and Davey Point, about 9.5 miles NE, is wooded, with numerous buildings amongst the trees; then to Ricketts Point, about 10.5 miles farther N, it is low, fringed with trees, behind which there are numerous buildings and cultivated ground.

The shore between Martha Point and Fisherman Point, about 3 miles NNE Martha Cliff, about 2 miles NNE, is cliffy; behind it the land rises to a flat-topped ridge, with Mount Martha at its SW extremity.

Balcombe Bay, between Martha Cliff and Fisherman Point, about 3 miles NNE, is fronted by rocks and backed by a red granite rocky coast. Shag Rock, which is conspicuous, lies close offshore, at the head of the bay, close S of a cement works. Fishermans Bay Reef, extending about 0.3 mile N from Fisherman Point, is marked by a beacon.

Schnapper Point, about 1 mile NNE of Fisherman Point, is a narrow projection about 15.2m high, and is fronted by red granite boulders on its W side. A jetty, extending about 198m NE from the point, has depths of 7.6m at its head, decreasing to 4.9m at 106m in from its head.

The coast between Schnapper Point and Davey Point, about 4 miles NE, is bold, being formed by hills; the highest and most conspicuous hill is Mount Eliza, 160m high, lying about 1.5 miles inland and 3 miles E of Schnapper Point. Wooley Reef, with a depth of 1.4m, lies about 0.6 mile NNE of Davey Point, at the outer end of a spit of sand and rock. It is marked by two beacons. A dangerous wreck lies 1 mile NW.

A T-head jetty at Frankston, about 1.5 miles NE of Davey Point, has a depth of 4.3m alongside its outer face.

The E shore N of Frankston is built over. A light, marking the S bank of the Patterson River, lies about 4 miles N of the jetty at Frankston. A gasometer is conspicuous about 2 miles farther N. The suburb of Mordialloc, where there is a jetty, lies about 8 miles N of Frankston.

Beaumaris Bay lies between Mordialloc and Table Rock Point, about 2.5 miles WNW. The latter point is formed of yellow cliffs, 12m high. A marine farm used for mussel cultivation lies on the W side of the bay.

1.36 **Ricketts Poin**t (38˚00'S., 145˚02'E.), about 0.4 mile WNW of Table Rock Point, is flat and 9.1m high. A drying rock lies midway along a spit, with depths of less than 5m, extending about 0.4 mile S of Ricketts Point. A beacon stands on the SW side of the rock.

The coast from Ricketts Point to Half Moon Bay, about 2 miles NW, is bordered by rocks and foul ground extending up to 0.5 mile offshore. Quiet Corner, a cliffy point, about 15m high, lies midway between the points. Black Rock, detached and awash, lies about 0.2 mile off Quiet Corner.

The S entrance point of Half Moon Bay is 12m high, and a reef, with a depth of 1.5m over its outer end, extends about 0.4 mile NW of the point. Black Rock Breakwater lies about 275m NW of the same point and is composed partly of timber and partly of a hulk. Red Bluff, at the N end of Half Moon Bay, is 34m high, reddish in color, and conspicuous; it is the only bare cliff in the vicinity. A conspicuous concrete building, 73m high, stands 1.2 miles ENE of Red Bluff.

Picnic Point, nearly 1.5 miles NW of Red Bluff, is a well-defined grassy point with a green-roofed building on it; depths of less than 5m extend about 0.5 mile SW of the point. A breakwater extends about 0.2 mile NNW of the point and shelters Sandringham anchorage.

Anonyma Shoal, about 0.8 mile SW of Picnic Point, has a least depth of 1.2m and is steep-to on its SW side; a black can buoy is moored close W of its least depth. Yorkies Rock, with a depth of 0.6m, and a 7m depth lie about 0.4 mile S and 1.3 miles W, respectively, of Picnic Point.

The shore from about 0.3 mile NE of Picnic Point to Green Point, about 1.2 miles NW, is formed by yellow bluffs, 12 to 15m high. A Dumping Area is established 0.6 mile SW of Green Point and is marked by buoys. Shoaling is to be expected within

this area. Green Point may be recognized by the yellow memorial on it, and by Middle Brighton Pier, about 0.2 mile SE.

Depths of less than 5m extend up to 0.5 mile offshore between Green Point and Point Cole, about 1.3 miles N. Middle Brighton Pier lies about 1 mile N of Green Point. Bonnet Rock, which dries 0.6m, lies about 0.2 mile S of Middle Brighton Pier and about 0.2 mile offshore; a beacon is moored W of the rock. A rock, with a depth of 0.6m, lies about 0.3 mile S of Bonnet Rock. Point Cole is low, with a conspicuous yellow building on it. Schnapper Rocks, with a depth of 3.3m, lies about 0.4 mile WNW of Point Cole.

Point Ormond (37˚50'S., 144˚56'E.), about 1.2 miles NNW of Point Cole, is a round, grassy point, about 12.2m high, with a white beacon on it. Pile beacons mark rocks lying about 0.2 mile offshore for about 0.4 mile N of Point Ormond.

St. Kilda Pier lies about 1 mile NNW of Point Ormond; and provides berthing for small craft; the pier extends about 0.2 mile offshore, then a rubble breakwater extends about 0.3 mile NNW.

Melbourne (37˚50'S., 144˚56'E.)

World Port Index No. 54030

1.37 The port of Melbourne lies at the N end of Port Phillip, and is one of Australia's principal ports, and one of the world's major container ports in volume of cargo handled. Melbourne Channel, entered about 4 miles SSE of **Point Gellibrand** (37˚52'S., 144˚54'E.), leads to the port, this dredged channel leads between the shoal banks on either side of Hobsons Bay. The latter bay is entered between Point Gellibrand and Point Ormond, about 3.5 miles WSW. Melbourne Channel leads N to Princes Pier and Station Piers; the latter pier is double-decked and the main overseas passenger terminal.

About 1 mile E of Point Gellibrand, a channel branches NW from Melbourne Channel and leads to Gellibrand Swinging Basin off the piers at Williamstown. Then this channel leads about 0.4 mile farther NW to the approach to Webb Dock and the channel leading to the entrance of the River Yarra.

The River Yarra enters the NW part of Hobsons Bay between breakwaters on each side of its entrance. The river then extends about 1 mile NW and 1 mile NNE to where the Maribyrnong River enters on its N side. From this junction the river leads E to Swanson Dock, Appleton Dock, and Victoria Dock. Construction of the Bolte Bridge was completed in 2002. The vertical clearance of the Bolte Bridge is 25m. The bridge is situated at the entrance to Victoria Dock. The river continues on to the Charles Grimes Bridge, which crosses the river about 0.7 mile ESE of the entrance to Victoria Dock. Navigation ends at the Charles Grimes Bridge, which has a vertical clearance of 3.2m.

The city of **Melbourne** (37˚50'S., 144˚58'E.) lies on either side of the River Yarra, surrounded by numerous suburbs. The city rises gradually from the River Yarra, and does not exceed an elevation of 91m. Its secure port and central position, with a network of railways and roads connecting with a large portion of Australia, command export and import trade.

Melbourne Port Corporation

http://www.melbport.com.au

Tides—Currents

The tidal rise at Melbourne is 0.8m at MHHW, and 0.8m at MLHW.

The tidal currents in Hobsons Bay are weak and their direction is mostly dominated by the prevailing winds.

The waters of the River Yarra are almost continually running outward. Even during the incoming tidal current, the water, from the surface to a depth of about 3.7m, is running out. Under the influence of strong S to W winds, however, an upstream current is caused. The normal rate of outflow is from 0.2 to 0.5 knot, but this is accelerated during heavy rains when its rate may attain 4 knots. The river has, on occasions during severe floods, overflowed its banks and caused damage to property.

Depths—Limitations

A submarine pipeline, containing flammable gas under high pressure, is laid in the N part of Port Phillip, and in the approach to Melbourne Channel. The pipeline extends from Mordialloc (38˚01'S., 145˚05'E.) to the vicinity of Kororoit Creek (37˚52'S., 144˚52'E.), and is marked in its NW part by lighted special buoys, painted yellow. Any vessel damaging the pipeline would face an immediate fire hazard. Vessels are cautioned not to anchor within 155m of the pipeline.

Channels.—There is a dredged depth of 13.1m in the approach channel to the port, 10m in the channel to Princes Pier and Station Pier, and 13.1m to the River Yarra, including Gellibrand Swinging Basin.

Melbourne Berthing Facilities (2003)

Berth	Length	Depth	Maximum vessel		Remarks
			Length	Draft	
South Wharf					
No. 26	266m	11.0m	215m	10.4m	Bulk cement.
No. 27	146m	9.4m	—	8.8m	Lay-up Berth
No. 28	146m	9.4m	215m	8.8m	General cargo.

Melbourne Berthing Facilities (2003)					
Berth	Length	Depth	Maximum vessel		Remarks
			Length	Draft	
No. 29	146m	9.4m	215m	8.8m	General cargo.
No. 33	210m	11.6m	—	11.0m	Bulk cement.
Appleton Dock					
Berth B	192m	10.7m	Vessels with a maximum length of 250m can be handled.	10.1m	Containers, general cargo, and vehicles.
Berth C	192m	10.7m		10.1m	Containers, general cargo, and vehicles.
Berth D	200m	10.7m		10.1m	Steel products & bulk cargo.
Berth E	137m	10.7m		10.1m	Bulk cargo.
Berth F	263m	11.4m		10.8m	Bulk cargo.
Swanson Dock					
No. 1W	Total berthing length of 844m.	13.1m	Vessels with a maximum length of 290m can be handled in the basin.	12.1m	Containers.
No. 2W		13.1m		12.1m	Containers.
No. 3W		12.7m		12.1m	Containers.
No. 4W		13.1m		12.1m	Containers.
No. 1E	Total berthing length of 884m.	12.9m		12.1m	Containers.
No. 2E		13.1m		12.1m	Containers.
No. 3E		13.1m		12.1m	Containers.
No. 4E		12.7m		12.1m	Containers.
Victoria Dock					
No. 22	261m	9.4m	215m	8.8m	General cargo.
No. 24	200m	9.4m	215m	8.8m	General & bulk cargo.
Yarraville					
No. 5	148m	9.4m	180m	8.8m	Dry bulk.
No. 6	205m	10.2m	190m	9.6m	Dry bulk.
Station Pier					
Outer East	223m	10.2m	305m	10.0m	Passenger vessels.
Outer West	257m	10.9m	305m	10.0m	Passenger vessels.
Inner East	220m	10.9m	305m	10.0m	Passenger vessels.
Webb Dock					
East No. 1	155m	7.0m	140m	6.4m	General cargo.
East No. 2	150m	7.0m	140m	6.4m	General cargo.
East No. 3	210m	10.0m	185m	9.4m	Containers, general cargo, and vehicles.
East No. 4	280m	12.1m	250m	11.9m	Containers, general cargo, and vehicles.
East No. 5	250m	12.5m	250m	11.9m	Containers, general cargo, and vehicles.
West No. 2	240m	9.1m	—	8.5m	Ro-ro.

Melbourne Berthing Facilities (2003)					
Berth	Length	Depth	Maximum vessel		Remarks
			Length	Draft	
Tanker Berths					
Breakwater Pier	213m	9.0m	230m	8.4m	Bulk liquids. Vessels over 215m long are allowed a maximum draft of 7.6m and may berth during daylight hours only.
Gellibrand Pier	289m	12.1m	290m	11.2m	Bulk liquids. Vessels with a length of over 250m may berth during daylight hours only, but may sail at any time, subject to weather conditions.
Maribyrnong No. 1	185m	10.0m	180m	9.4m	Bulk liquids.
Holden Oil Dock	200m	13.1m	185m	12.1m	Bulk liquids.

There is a dredged depth of 13.1m from the entrance of the River Yarra to Swanson Dock; then 10.3 to 11m to Victoria Basin, including the swinging basin in Victoria Basin.

Note.—Maintenance dredging is continuous in Port Melbourne.

All vessels are required to have an underkeel clearance of at least 0.6m at all times. Vessels over 183m in length, proceeding to Webb Dock or navigating the River Yarra, must have an underkeel clearance of 10 per cent of their draft.

Berthing limitations in Melbourne are given in the accompanying table.

Bridges.—Westgate Bridge, about 1.3 miles above the entrance to the River Yarra, has a vertical clearance of 59m.

Bolte Bridge, with a vertical clearance of 22.9m, runs across the River Yarra close E of the overhead cable mentioned below. In 1997, commercial shipping had ceased E of the bridge.

Overhead power cables.—An overhead power cable, with a vertical clearance of 56m, crosses the River Yarra between two towers on opposite sides of the river, close W of the entrance to Victoria Dock.

Precautionary area.—A precautionary area has been established in the waters encompassing the Port Melbourne Channel, and is best seen on the appropriate chart. See Signals and Regulations for further details.

Spoil area.—A spoil area, in which there are depths of 12m, lies between 6.5 and 10 miles S of Point Gellibrand. Less water than charted, with depths of 12m, were reported close N of the spoil area.

Aspect

The E approach to Melbourne lies between Martha Point (38˚18'S., 144˚59'E.) and Point Ormond, about 25 miles N; this coast was previously described in paragraph 1.35 and paragraph 1.36. Flinders Peak (37˚57'S., 144˚25'E.), of The You Yangs, on the W side of Port Phillip, was previously described in paragraph 1.28, and is a good landmark.

In the near approach to Melbourne, the following marks are conspicuous:

1. Red Bluff (37˚58'S., 145˚01'E.), a bare cliff, with conspicuous tanks about 1.7 miles ENE
2. A refinery tower, marked by red obstruction lights, about 3 miles WNW of Point Gellibrand
3. Government House (37˚50'S., 144˚59'E.), a white stone building, with a tall, square tower, on rising ground, about 4.5 miles NE of Point Gellibrand

Other conspicuous landmarks include Timeball Tower, constructed of white stone and bricks, 30m high, about 0.5 mile NE of Point Gellibrand; oil tanks, close NE of Timeball Tower; a conspicuous building, 46m high, about 0.7 mile N of Point Gellibrand; A.P.A. yellow dome, floodlit at night, and one of the highest buildings in Melbourne, about 4.5 miles NE of Point Gellibrand; and Point Cook, about 6 miles SW of Point Gellibrand, a low and rocky point, with a conspicuous pine plantation on it, and marked by a beacon on its SW end.

The entrance to Melbourne Channel is marked on its E side by Fawkner Light, shown from a pile structure about 4.5 miles SSE of Point Gellibrand. The channel is then marked by lighted beacons numbered from seaward.

Gellibrand Shoal, with a least depth of 2.3m, is the remains of a demolished light, and lies about 0.5 mile ESE of Gellibrand.

Port Melbourne Channel Direction Light is shown from a white concrete tower about 0.3 mile NW of the base of Station Pier. The light is visible over a narrow tri-color sector. A vessel is on the leading line when in the white sector. The red sector indicates W of the line; the green sector indicates E of the line.

The dredged channel, which leads from Melbourne Channel to the piers at Williamstown, the approach to Webb Dock, and the entrance to the River Yarra, is marked by a directional light shown from the W side of the entrance to Webb Dock.

Lighted beacons mark the E side of Gellibrand Swinging Basin, the E side of the approach to Webb Dock, and the E and S sides of the River Yarra. Lighted beacons also mark the W side of the approach to Webb Dock, and W and N sides of the River Yarra.

Two lighted beacons stand on the Warm of Webb Dock. These lights, in line bearing 321˚, have been set up for container ships with high bridge structures.

Two pair of range lights are shown at the E entrance and the head of Swanson Dock to assist the navigation of container vessels. The first pair is in line bearing 064.8˚, and the range lights at the head are in line bearing 001.8˚.

Pilotage

Pilotage is compulsory. See Port Phillip, in paragraph 1.28, for pilotage information.

Signal Station—Signal Control Center.—Signal stations, from which traffic signals are shown, are situated on the head of Breakwater Pier, at Williamstown, and at the Shipping Control Center, on the S entrance point of Victoria Dock.

The Shipping Control Center is a two-storied structure supported on a rectangular tower, with an overall height of 40m. The control center is equipped with radar and radiotelephone. All shipping entering or leaving the harbor is under the control of the center, which also dispatches tugs, docking pilots, mooring crews, and customs agents to the vessel involved. Contact can be made on VHF channel 16, call sign "Harbor Control."

Radio reporting points.—Both inbound and outbound vessels are required to communicate with Harbor Control at specific radio reporting points, best seen on the appropriate chart.

A Port Information Service is provided at Melbourne. See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for general signals in use at all Australian Ports. All movements are controlled on a 24-hour basis. No vessel (except for small craft under 20m in length not engaged in towing or licensed to carry passengers) should enter the port or proceed from her berth or anchorage without permission from Harbor Control.

Radio Calling Points are established in the harbor and vessels should check the chart for details.

Regulations

The following information is derived from the Port of Melbourne Authority regulations, a copy of which should be obtained on arrival.

Vessels approaching or leaving the River Yarra when passing Williamstown must proceed at the lowest speed consistent with safe navigation.

Vessels navigating the port must not exceed a speed of 7 knots, from the entrance to the River Yarra to the W end to the junction with the Maribyrnong River; 5 knots then to the W side of the entrance to Appleton Dock; 4 knots then to Johnson St. Bridge; 8 knots, within any other part of the port. When passing works in progress on the banks of the river, sunken vessels, vessels aground or at anchor, tugs with train in tow, or vessels moored at any wharf, speed must not exceed 4 knots.

A vessel approaching another proceeding in the opposite direction shall, at a distance of not less than 100m, reduce speed and keep on that side of the fairway which lies on the starboard side of such vessel.

Vessels proceeding up the rivers within the port shall give way to vessels proceeding down such rivers.

A vessel shall, at least 0.2 mile from any dredging machine, diving punt, or rock-breaking machine, go dead slow; and prior to passing over or along the mooring chains of such dredging or rock-breaking machine or punt, the engine of such vessel shall be stopped until the vessel has passed clear of the mooring chains.

In the Precautionary Area, it is recommended that when entering, transiting, and leaving the Precautionary Area, vessels at all times should keep to the E when inbound, and to the W when outbound. Any inbound vessel shall not hinder any vessel using the Port Melbourne Channel or the Williamstown Channel or any vessel which is outbound, which is within or which is about to enter, the Precautionary Area. It is essential for vessels navigating within the port to maintain radio contact with Harbor Control and directly with one another. Vessels when inbound may use the area to the E of the Port Melbourne Channel. Yachts and other pleasure craft should keep to the E of the Port Melbourne Channel as far as possible and avoid at all times hindering the movement of larger vessels, particularly those constrained by size and draft to the shipping channels.

No oil or refuse of any kind may be discharged from any vessel while in the port, and all steam pipes must be effectively screened. No ballast may be discharged in the port except at such places as may be approved by the Commissioners.

Quarantine.—Vessels subject to quarantine must not proceed N of a line drawn about 085˚ from a point close S of Timeball Tower Light to St. Kilda Pier.

Anchorage

Anchorage in convenient depths, over a bottom of mud and shells, may be taken anywhere along the routes leading to the port of Melbourne from the E end of South Channel, the N ends of Coles Channel and West Channel, or from Geelong, remaining clear of the spoil area and gas pipeline, in the approach to Melbourne Channel.

Hobsons Bay is open to S gales which send in short, choppy and treacherous seas. Vessels must select anchorage according to draft and where they can swing well clear of channels and fairways. Small vessels whose draft permits can find shelter NW of Nelson Pier, at Williamstown. Vessels intending to remain at anchor in Hobsons Bay for over 48 hours must moor.

Prohibited anchorage.—Anchorage is prohibited in the area indicated on the chart SE of Breakwater Pier.

Anchorage is prohibited on the Yarra River S of the West Gate Bridge abeam of the BP Jetty, the Shell Jetty, and the Caltex Jetty.

Anchorage is prohibited in any fairway or channel or near the middle of any river.

For inner and outer explosive anchorages, see the description of the N shore of Port Phillip in paragraph 1.38.

Directions

From the E end of South Channel, a course of 002˚ for about 25 miles leads to the entrance of Melbourne Channel.

From the N end of West Channel, a course of 025˚ for about 18.5 miles leads to the entrance of Melbourne Channel.

With the exception of the spoil area and the gas pipeline, there are no dangers in the approach to Melbourne from South Channel and West Channel.

Port Phillip—North Shore

1.38 Altona Bay, between **Point Gellibrand** (37˚52'S., 144˚54'E.) and Point Cook, about 6 miles SW, is backed by low land and swampy ground, and is largely filled by a bank with depths of less than 5m, extending up to 1.2 miles offshore.

The mouth of Kororoit Creek lies about 2 miles WNW of Point Gellibrand. A refinery tower, marked by a red obstruction light, is conspicuous about 1 mile WNW of the river mouth.

Laverton Jetty, with a depth of 3m at its head, lies about 2 miles WSW of the mouth of Kororoit Creek; submerged piles extend about 150m S of the jetty. Altona Reef, with depths of less than 5m, extends about 1.2 miles SE from a position about 0.8 mile E of Laverton Jetty. Four lighted beacons mark the limits of a firing danger area E of Altona Reef.

Truganina Jetty, in ruins, lies about 1 mile SW of Laverton Jetty, and the entrance to Skeleton Creek lies about 1 mile farther SSW. Close N of the entrance to Skeleton Creek, and extending for about 1 mile the shore is backed by the state powder magazines, which can be recognized by the regular rows of buildings on it, and the high fence surrounding it.

Point Cook (37˚56'S., 144˚48'E.), about 1.7 miles S of the mouth of Skeleton Creek, is low and rocky, a beacon, 5m high, stands 300m NW, and a conspicuous pine plantation, about 600m SW of Point Cook. A rocky spit, with a least depth of 0.9m, extends about 1 mile E of Point Cook. Dumb Joe Buoy is moored close SE of the end of the spit.

The Explosives Anchorage, the center of which is marked by a lighted buoy, lies 2.5 miles ESE of Point Cook.

The coast from Point Cook to the entrance of the Werribee River, about 6 miles SW, is low and backed by Werribee Plain, and has depths of less than 5m extending about 1 mile offshore.

A target buoy area, where buoys are moored when required, is centered about 1.5 miles SW of Point Cook.

Two red lights, for the use of aircraft, vertically disposed, are shown at an elevation of 31m, about 2.5 miles W of Point Cook. A firing area, the limits of which are best seen on the chart, lies 0.7 mile SW of the lights.

Western Arm of Port Phillip and the Port of Geelong

1.39 The Western Arm of Port Phillip, which includes the port of Geelong, is entered between Point George (38˚08'S., 144˚42'E.), on the S side, and the mouth of Werribee River, about 9 miles N, on the N side. The arm then extends about 16 miles WSW to the port of Geelong at its head.

West of Point Wilson (38˚06'S., 144˚30'E.), on the N shore, the port of Geelong is divided into an outer harbor and an inner harbor by two shallow banks. The outer harbor is enclosed by the bank and Wilson Spit, extending about 3 miles S of Point Wilson, and the bank which crosses the port from Point Lillias, about 3 miles W of Point Wilson, to Point Henry, about 2.5 miles WSW. The latter bank encloses Corio Bay, the inner harbor. Spacious and secure anchorage may be obtained in the outer harbor, in depths of 7.3 to 9.1m.

The main route to Corio Bay leads through Point Richards Channel, Wilson Spit Channel and Hopetoun Channel, dredged through the banks which obstruct the port.

Western Arm—North Shore

1.40 The entrance of the **Werribee River** (37˚59'S., 144˚41'E.) may be recognized by the tower of Corpus Christi College on the E side of the river, about 3 miles NNW of the entrance, and by a prominent water tower standing at an elevation of 37m on the N side of the river entrance. The river entrance is fronted by a shallow bar, and a light is shown on the NE side.

The coast between Werribee River entrance and Point Lillias, about 13.5 miles SW, is low, flat, and dominated inland by Flinders Peak (37˚57'S., 144˚25'E.).

Plantations of cypress trees border the shore from Werribee River entrance to Wedge Point, about 2.5 miles SW. Wedge Spit, with depths of less than 1.8m, extends about 1 mile S of Wedge Point. A pile beacon marks the 5m curve about 1 mile SSW of the outer end of Wedge Spit. An artificial reef, with a depth of 6.4m, lies about 1 mile SSW of the pile beacon.

Beacon Point lies about 3.5 miles WSW of Wedge Point. Long Reef, with a rock awash and a rock, with a depth of 0.3m, near its outer end, extends about 1 mile SE of Beacon Point. A pile beacon lies close N of the 0.3m rock.

Kirk Point, marked by a beacon, lies about 1.2 miles SW of Beacon Point. Between Kirk Point and Point Wilson, about 4 miles SSW, there is a mangrove-fringed lagoon, separated from the sea by The Sand Hummocks, two narrow sandy promontories. Arthur the Great Spit, with a depth of 4.9m near its outer end, extends about 2.3 miles SE from The Sand Hummocks. A buoy is moored near the outer end of the spit.

1.41 **Point Wilson** (38˚06'S., 144˚30'E.) is marked by a beacon; a tank lies about 0.3 mile NNW of the point. Avalon Air Control Tower, 35m high, with hangars and buildings, is conspicuous about 3 miles NNW of Point Wilson. Point Wilson Bank, with depths of less than 5m, extends about 1.3 miles SSE of Point Wilson and is marked close within its seaward end by Steamboat Beacon, a pile beacon with a triangular topmark. Wilson Spit, a continuation of Point Wilson Bank, with depths of 3.6 to 5.5m, extends about 2 miles SSW of Steamboat Beacon to within 1.2 miles of the S shore of Western Arm. Wilson Spit Beacon, a pile beacon, 7.9m high, marks the S end of Wilson Spit.

Commonwealth Explosives Pier extends about 1.5 miles ESE from a position about 0.3 mile N of Point Wilson. Berths, 168m long, on each side of the head of the pier, have depths of 9.1m alongside, with a maximum permissible draft of 8.4m. The area around the head of the pier is dredged to 9.1m. A rocky patch, with a depth of 8.2m, and marked S by a buoy, lies about 0.1 mile NNE of the head of the pier. The channel, extending from Point Richards Channel to the pier, has a depth of 9.1m.

Lights, in line bearing 273.5˚, on the outer end of the pier, lead through the approach channel to the pier. Two lighted beacons mark the N limit of the dredged channel in the pier approach.

Explosives anchorage.—Vessels carrying explosives, when required to anchor, may anchor in the explosives anchorage centered about 0.7 mile NNE of the head of Commonwealth Explosives Pier. This small anchorage is limited to the use of vessels carrying less than 300 tons of explosives.

Snake Island (38˚05'S., 144˚28'E.) lies midway along the coast between Point Wilson and Point Lillias, about 3 miles W. The island, connected to the mainland by salt flats, separates two shallow bays. **Snipe Hill**, a grassy hummock, 18.3m high, lies about 0.2 mile inland at the head of the E bay. A rocky spit, with a depth of 1.5m over its outer end, and an exposed wreck extends about 0.5 mile S of the S end of Snake Island.

Point Lillias (38˚06'S., 144˚27'E.), the N entrance point of Corio Bay, is a grassy point, 6.1m high, and fringed with rocks. A white beacon stands about 0.2 mile NW of the point. Bird Rock, 1.5m high and marked by a beacon, stands on a reef extending about 0.5 mile SSE of Point Lillias.

Between Point Lillias and Point Henry, about 2.3 miles SSW, Corio Bay is fronted by a bar, with depths of 5m, and which dries 0.3m in places. A beacon stands on the E side of the bar, about 0.7 mile SE of Point Lillias.

Western Arm—South Shore

1.42 Point George (38˚08'S., 144˚42'E.) and Prince George Bank have been previously described in paragraph 1.32.

The coast between Point George and Harding Reach, about 2 miles NW, is low; then to Portarlington, about 0.7 mile W, it is formed by yellow bluffs, 18m high. Grassy Point Beacon, 4.9m high, and a similar beacon, stand about 1 mile NW of Point George and on Harding Reach, respectively. A jetty fronts the town of Portarlington, and the white tower of a hotel, about 0.2 mile S of the root of the jetty, is visible for about 15 miles from the NE.

From Portarlington, a low and bare shore extends about 1 mile WNW to Point Richards; a white beacon, 4.9m high, lies about 0.1 mile SW of Point Richards. Point Richards Bank, with depths of less than 5m, extends about 0.5 mile NW and 1.2 miles W of Point Richards; two piles mark the outer part of the bank W of the point.

The coast for about 1.5 miles SW of Point Richards is low, and then for about 5 miles WSW it is formed by bold yellow bluffs, 27m high. Spray Farm Beacon, white and 5m high, stands about 2 miles SW of Point Richards, with a conspicuous farm standing in a grove of trees about 0.2 mile SW. The town of Clifton Springs, about 2.5 miles farther SW, is fronted by three jetties in ruins. Curlewis Beacon marks the W end of the yellow bluffs. Bellarine Beacon, 4.9 high, lies about 1 mile farther W. Depths of less than 5m extend about 0.5 mile offshore along this coast, and a spoil ground extends about 1 mile offshore abreast of Curlewis Beacon.

The bay between Bellarine Beacon and Point Henry, about 4 miles WNW, is mostly occupied by a spoil ground.

1.43 Point Henry (38˚08'S., 144˚25'E.), the N entrance of Corio Bay, is the N end of a promontory which rises as a steep ridge, 9m high, along its axis. A beacon, 5m high, stands close within the point. The water tower of the Alcoa Aluminum Works is conspicuous about 0.3 mile SSW of the beacon. A bank, which dries 0.3m, extends about 0.3 mile NNW of Point Henry.

Point Henry Operations Control Center.—About 0.2 mile SSW of Point Henry is a cream-colored tower, 11m high, surmounted by a white mast. The signal station is equipped with VHF radiotelephone and is connected to the telephone system. All traffic entering and leaving the port of Geelong is controlled from this post.

Point Henry Pier, for the unloading of alumina, extends about 0.6 mile ENE from a position about 0.3 mile SSE of Point Henry. The berth on the N side of the outer end of the pier and Point Henry Channel, which leads from the W end of Wilson Spit Channel, were dredged to 12m. A turning basin, dredged to 8.2m, lies E of the head of the pier. The berth can accommodate vessels up to a maximum length of 183m.

Lights, in line bearing about 233.8˚, lead through Point Henry Channel. Lighted beacons mark the SE sides of Point Henry Channel and the turning basin.

Geelong (38˚09'S., 144˚22'E.)

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1.44 The port of Geelong is situated in Corio Bay, the inner harbor of the Western Arm of Port Phillip. The major portion of the trade of the port is of a bulk nature, both dry and liquid. The city of Geelong is situated on the SW and W sides of Corio Bay.

Tides—Currents

The tidal rise at Geelong is 0.8m at MHHW, and 0.7m at MLHW.

The tidal currents in Western Arm are at all times weak and irregular, except between Lighted Beacon No. 5 and Lighted Beacon No. 6 in Hopetoun Channel, where it crosses the bar between Point Henry and Point Lillias; the outgoing current here has a rate, during its second quarter, of 1 knot. At the E end of Wilson Spit Channel, a slight cross set of the tidal current is perceptible.

Depths—Limitations

The main approach to Corio Bay leads through Point Richards Channel, Wilson Spit Channel, and Hopetoun Channel. Each of the above channels are marked by lighted beacons, numbered from seaward in accordance with IALA Maritime Buoyage System A. The channels are 122m wide and are maintained to a depth of 12.3m.

Point Richards Channel is entered about 1.5 miles NNE of Point Richards (38˚07'S., 144˚38'E.), and extends in a WSW direction for about 6 miles to its junction with Wilson Spit Channel.

Wilson Spit Channel, with its entrance about 2.5 miles SSE of Point Wilson, extends in a WNW direction for about 4 miles to its junction with Hopetoun Channel, about 1.5 miles ENE of Point Henry. In 1998, a declared depth of 11m applied to all of Wilson Spit Channel.

Hopetoun Channel extends in a WSW direction for about 4 miles, passing across the bar which encloses Corio Bay, and passing about 0.3 mile N of Point Henry.

From the W end of Hopetoun Channel, City Channel leads S to Cunningham Pier, and Corio Channel leads N to Bulk Grain Pier, Corio Quay, Lascelles Wharf, and Refinery Pier. City Channel was dredged to 9.7m in 1990, and lighted beacons mark its N entrance.

The maximum draft permissible in the approach channels and to the berths at Bulk Wheat Pier, Lascelles Wharf, and Refinery Pier is 10.5m; to Corio Quay and Cunningham Pier, 9.3m.

Vessels drawing less than 8.4m may proceed direct to and from their berth W of Lighted Beacon No. 14 of Hopetoun Channel.

Piers.—The Bulk Grain Piers have alongside lengths and dredged depths, as follows:

Berth	Length	Depth
Berth No. 1	201m	10.5m
Berth No. 2	201m	12.3m
Berth No. 3	168m	12.3m

Within Corio Quay contains four berths, South Wharf Berth No. 1, in the SW corner, has ro-ro facilities. North Wharf, with Berth No. 1, Berth No. 2, and Berth No. 3, is on the N side. All berths have an alongside dredged depth of 11m.

Lascelles Wharf, a container terminal, has an alongside dredged depth of 12.3m.

Refinery Pier has a dredged depth of 12.3m alongside all berths. The largest berth will accommodate vessels up to 275m in length.

Cunningham Pier has a depth of 9.7m alongside.

Aspect

Stingaree Bay, between Point Henry and **Limeburners Point** (38˚09'S., 144˚23'E.), about 2.3 miles SW, is shallow; the shore is low and backed by salt flats, except in the vicinity of Limeburners Point, where there are low cliffs. The red building of a salt works is situated 2.5 miles SSW of Point Henry. A tower, 64m high, stands about 0.4 mile SE of Limeburner's Point.

Rippleside Pier, about 1.5 miles NW of Limeburners Point, is the berth and depot of the Geelong Harbor Trust.

The most conspicuous objects in Corio Bay are the wheat silos, close W of the root of Bulk Grain Pier, about 1 mile N of Rippleside Pier. About 1 mile NNW of the silos, the conspicuous chimney of a freezing works lies close S of Corio Quay.

Refinery Pier lies about 1.5 miles NE of Corio Quay. Refinery tanks and a conspicuous chimney, painted in orange and white bands, lie about 0.4 mile N of the root of Refinery Pier.

Lights, in line bearing 315˚, close off the NE side of Refinery Pier, are occasionally shown for the approach to Berth No. 1.

The N shore of Corio Bay lies between Point Lillias and **Point Abeona** (38˚05'S., 144˚24'E.), about 2 miles WNW; the E part of this stretch of coast is backed by salt flats. The shore for about 0.5 mile SE of Point Abeona is fronted by trees. The conspicuous red brick clock tower of Geelong Grammar School is situated about 0.5 mile NW of Point Abeona.

Pilotage

Pilotage is compulsory. See Port Phillip, in paragraph 1.28, for pilotage information.

Point Henry Operations Control Center, on Point Henry, is manned continuously, equipped with VHF radiotelephone, and connected to the telephone system. All traffic entering and leaving the port is controlled from the center.

The following signals are made from the center for the control of traffic through Point Richards Channel, Wilson Spit Channel, and Hopetoun Channel:

1. N—Stop, or word STOP in Morse Code.
2. V—Proceed, or word PROCEED in Morse Code.
3. SW—I wish to proceed through the channels, by outbound vessels. If at a pier or wharf, permission can be obtained by telephone; if at anchor, by displaying flags SW by day, by lamp at night, or by radiotelephone.

All instructions from the signal station must be strictly and promptly obeyed.

Regulations

The master of a vessel navigating any channel within the port shall cause such vessel to be navigated at the lowest speed consistent with safety; provided that in respect of any portion of the port W of Beacon No. 14, Hopetoun Channel, the maximum speed over the ground shall not exceed 7 knots or such lower speed as is necessary to prevent damage to any other vessel or to the property of the Commissioners.

The master of a vessel shall not permit his vessel to enter any channel within the port, and if inbound, shall not permit the vessel to approach within 1 mile of the entrance to Point Richards Channel unless special permission has been granted bytheharbormasterorfromPointHenryOperationsControlCenter.

The master of any oil tanker inbound, by day or at night, before shaping a course for Point Richards Channel, shall use every endeavor to notify Point Henry Operations Control Center by signal that such vessel is ready to proceed and shall show the following signals:

1. By day—Flag B of the International Code of Signals over a black ball.
2. At night—A red light at the masthead or where it can best be seen, but not less than 6.1m above the deck, and of such character as to be visible all round the horizon.

The master, owner, or agent of any oil tanker which is intended to put to sea (by day or at night) shall:

1. Notify Point Henry Operations Control Center of such intention before the departure of such vessel from berth or anchorage.
2. Immediately on departure show the day or night signal prescribed above.

No vessel in which there has been a fire on board within 24 hours previously or being in an unseaworthy condition as may in the opinion of the harbormaster endanger the safety or navigation of the port, shall enter any channel within the port without the special permission in writing of the harbormaster. On arrival in the port, the master shall notify the harbormaster

through the signal station of such fire or unseaworthy condition.

Quarantine.—Geelong is a first port of entry. The quarantine line is a line drawn from Limeburners Point to the mouth of **Limeburners Creek** (38˚05'S., 144˚24'E.).

Anchorage

Vessels over 9.1m draft anchor, in a least depth of 12.5m, outside the entrance to Point Richards Channel, and S of its prolongation.

Vessels over 8.4m draft anchor, in a least depth of 9.4m, E of and within 1 mile of Lighted Beacon No. 17, Point Richards Channel.

In Corio Bay, the bottom is soft mud and the holding ground is not good. Main engines may not be immobilized without the permission of the harbormaster. Anchorage is only permitted in the following positions; distances and bearings from the light structure on the head of Bulk Grain Pier (38˚07'S., 144˚22'E.):

1. In 8.8m, 067˚, distant about 0.9 mile.
2. In 8.8m, 092˚, distant about 0.8 mile.
3. In 8.8m, 117˚, distant about 0.9 mile.
4. In 7.9m, 133˚, distant about 1.4 miles.
5. In 7.9m, 147˚, distant about 1.4 miles.

Vessels in quarantine should anchor as required by the harbormaster.

For explosives anchorage, see Commonwealth Explosives Pier off Point Wilson in paragraph 1.41. Vessels with explosives aboard, while within the port, must anchor only as and where the harbormaster shall direct.

Directions

After clearing South Channel or West Channel, steer to pass a safe distance E of Prince George Light, at the NE end of Prince George Bank.

Note.—At night, keep in the white sector of Eastern Light, at the E end of South Channel, or in the white sector of West Channel Pile Light, at the N end of West Channel, to clear Prince George Bank.

When clear of Prince George Bank, use the safe water lighted buoy, moored about 3.2 miles N of Point George as a guide, and approach and enter Point Richards Channel entrance on a course of about 260˚. Then steer a mid-channel course through Point Richards Channel, Wilson Spit Channel and Hopetoun Channel to Corio Bay. Careful steering is necessary when the tidal influence is felt, especially in the E approach to Wilson Spit Channel, and between Lighted Beacon No. 5 and Lighted Beacon No. 6 of Hopetoun Channel.

Having passed Lighted Beacon No. 16 at the W end of Hopetoun Channel, course may be shaped as convenient for one of the anchorage berths or for any of the wharves or piers in Corio Bay. A vessel of deep draft should continue in the dredged channel as far as Lighted Beacon No. 15 or Lighted Beacon No. 18; the vessel then may proceed by Corio Channel or City Channel to the desired berth.